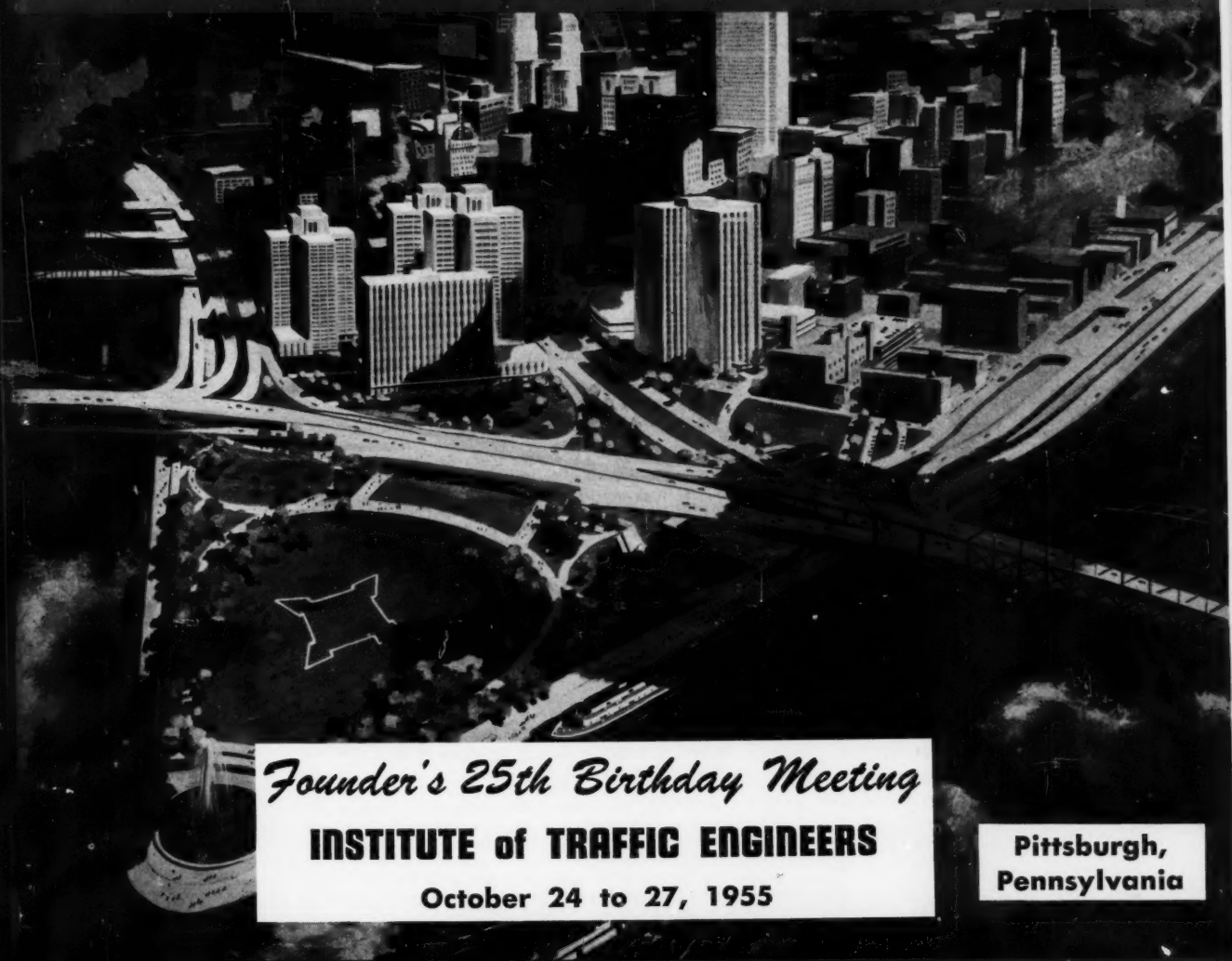
OCTOBER, 1955

Traffic Engineering



Founder's 25th Birthday Meeting

INSTITUTE of TRAFFIC ENGINEERS

October 24 to 27, 1955

Pittsburgh, Pennsylvania

Pittsburgh's Golden Triangle in 1960.

CONVENTION ISSUE

Official Publication of the Institute of Traffic Engineers

TENTATIVE PROGRAM

FOUNDERS' 25th BIRTHDAY MEETING
INSTITUTE OF TRAFFIC ENGINEERS

PITTSBURGH, PENNSYLVANIA — WILLIAM PENN HOTEL

October 23-27, 1955

WHEN	WHO	WHAT	WHERE
SUNDAY, OCTOBER 23rd			
10:00 A.M.	Officers and Directors	MEETING OF BOARD OF DIRECTION	17th Fl. Room
A.M. & P.M.	Everyone	REGISTRATION	17th Fl. Alcove
P.M.	Committee Members	COMMITTEE MEETINGS	17th Fl. Rooms
2:00 P.M. on	Everyone	HEADQUARTERS ROOM ACTIVITIES	Monongahela Rm. (17th Fl.)
MONDAY, OCTOBER 24th			
8:00 A.M.	Everyone	REGISTRATION	17th Fl. Alcove
8:30 A.M.	Men and Ladies	STEEL MILL TOUR	Lv. from Wm. Penn
Noon	Men and Ladies	KICK-OFF LUNCHEON	Ballroom
2:30 P.M.	Members	ANNUAL BUSINESS MEETING	Urban Room (17th Fl.)
P.M.	Ladies	LADIES GET-TOGETHER AND PROGRAM	Headquarters Room
5:00 P.M. on	Everyone	HEADQUARTERS ROOM ACTIVITIES	Monongahela Room (17th Fl.)
7:30 P.M.	Officers and Directors	MEETING OF BOARD OF DIRECTION	17th Fl. Room
TUESDAY, OCTOBER 25th			
7:30 A.M.	Men	BISCUIT BANTER BREAKFAST	Terrace Room (Main Fl.)
9:30 A.M.	Men	TECHNICAL SESSION No. 1 — Subjects in Allied Fields Donald M. McNeil — Chairman (a) "Where Are We Going In Our National Highway Program?" — Alfred Johnson (b) "Public Relations for the Traffic Engineer" John Darr (c) "Lessons Learned by Proving Ground Engineers Pertaining to Highway Design and Control"—Kenneth A. Stonex	Urban Room (17th Fl.)
11:00 a.m. thru afternoon	Ladies	LUNCHEON AND TOUR OF OAKLAND CULTURAL CENTER	Lv. from Wm. Penn
Noon	Men	LUNCHEON SPONSORED BY YALE BUREAU	Monongahela Rm.
2:30 P.M.	Men	TECHNICAL SESSION No. 2 — Broad Subjects of Direct Concern to Traffic Engineers — Joseph E. Havenner—Chairman (a) "National Trends in Traffic Growth"—E. H. Holmes (b) "Traffic Engineering Administration"—D. Grant Mickle (c) "Traffic Engineering Consultation"—Wilbur S. Smith	Urban Room
4:30 P.M.	Men	PREVIEW OF FIELD TRIP	
5:00 P.M. on	Everyone	HEADQUARTERS ROOM ACTIVITIES	Monongahela Rm.
7:30 — 9:00 P.M.	Men and Ladies	TOUR OF NEW ALCOA BUILDING	ALCOA Building
WEDNESDAY, OCTOBER 26th			
9:00 A.M.	Men	TECHNICAL SESSION No. 3A — Urban Subjects Karl A. Bevins—Chairman (a) "Parking as a Factor in Business"—J. T. Stegmaier (b) "Radio Coordinated Control Signals"—Ralph Michel (c) "Does Urban Transit Have a Future"—Donald C. Hyde	Urban Room
9:00 A.M.	Men	TECHNICAL SESSION No. 3B — Statewide Subjects J. Carl McMonagle — Chairman (a) "Future Highways of Pennsylvania"—General George J. Richards (b) "Responsibility of the Traffic Engineer in Speed Control and Regulation"—J. Edward Johnston (c) "Accidents at Signalized Intersections"—George M. Webb	Fort Duquesne Rm. (17th Fl.)
9:30 a.m. to 1:00 p.m.	Ladies	HEINZ PLANT TOUR AND LUNCHEON	Lv. from Wm. Penn
2:00 P.M.	Men	TECHNICAL SESSION No. 4 — Round Table on Technical Subjects being Studied by Committees — Charles W. Prisk — Chairman (a) "How to Handle Traffic Complaints"—Jerome Franklin and James E. Reading (b) "Civil Service Requirements for Traffic Engineering Positions" —Norman Kennedy and Donald S. Berry (c) "Policies on One-Way Streets"—Matthew C. Sielski and Walter H. Klapproth (d) "Parking Meters"—William Marston and Ralph H. Sprungman (e) "Design of Safety Curb and Center Line Devices" —Alger F. Malo and Edwin F. Clark (f) "Policy on Curb Parking"—Edmund R. Ricker and Richard A. Overmyer (g) "Traffic Survey Devices"—Lloyd Braff and John L. Barker (h) "Traffic Engineer's Technical Notebook"—Ted Siegel and Robert Allen	Urban Room

1:00-2:30 p.m.	Ladies	OPEN FOR SHOPPING	
2:30-4:00	Ladies	GATEWAY CENTER TOUR & TEA	Lv. from Wm. Penn
6:00 P.M.	Men and Ladies	COCKTAIL HOUR	Terrace Room (Main Fl.)
7:30 P.M.	Men and Ladies	ANNUAL BANQUET with Music and Dancing	Pittsburgh Room (Main Fl.)
After 10:00 p.m.	Everyone	HEADQUARTERS ROOM ACTIVITIES	Monongahela Rm. (17th Fl.)

THURSDAY, OCTOBER 27th

9:00 A.M.	Men and Ladies	FIELD TRIP—including urban redevelopment, parking garages, expressways, and ending with inspection of new airport.	Lv. from Wm. Penn Hotel by bus
Noon	Men and Ladies	CLOSING LUNCHEON AT AIRPORT (Luggage will be transported to airport for persons departing by air in the afternoon).	Horizon Room

WHAT'S GOING ON IN PITTSBURGH DURING CONVENTION WEEK

NIXON THEATER — Legitimate Theater — to be announced (consult newspapers)

PITTSBURGH PLAYHOUSE — Pittsburgh's Little Theater — play to be announced (consult newspapers)

DUQUESNE GARDENS — Hockey game between Pittsburgh Hornets and Hershey on Saturday, October 22nd, 8:30 p.m.

SYRIA MOSQUE — Pittsburgh Symphony under William Steinberg on October 23rd, 3:10 p.m. Ballet Russe — October 24th, 8:30 p.m.

CARNEGIE INSTITUTE — Carnegie International Art Exhibit — Weekdays: 10:00 a.m. - 10:00 p.m.
Sundays: 2:00 p.m. - 5:00 p.m.
Renovated and revitalized Museum — Weekdays: 10:00 a.m. - 5:00 p.m.
Tuesday Eve: 5:00 p.m. - 10:00 p.m.
Sundays: 2:00 p.m. - 5:00 p.m.

CINERAMA HOLIDAY — Warner Theater — Matinees at 2:00 on Mon., Wed.; 1:00 on Thurs.; 2:30 on Sun.; Evenings at 8:30 Mon. thru Thurs.; Sun. 5:30 and 8:00 p.m.

BUHL PLANETARIUM — "In the Beginning" — sky show depicting how earth began — 8:30 p.m.

MOTION PICTURES — as listed in newspapers.

TOUR OF ALCOA BUILDING

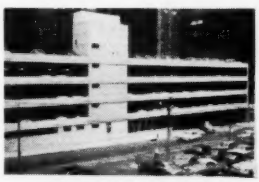
ANYTIME TUESDAY BETWEEN 7:30 p.m. and 9:00 p.m.

ALCOA BLDG.

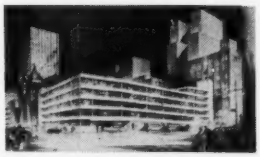
THE ALCOA BUILDING, America's first aluminum skyscraper, is located in the heart of Pittsburgh's Golden Triangle at Sixth Ave. and Wm. Penn Place. While the building features many new construction techniques, highlights include the cantilever supported 4½ story main entrance, spacious lobby, modern 71 seat theater for movies and lectures, the executive suites, and the penthouse floor with rooftop garden and patio overlooking the city.

PARKING GARAGE TOUR

Informal Tours of Public Parking Authority Facilities. Monday and Tuesday, anytime between 4:00 p.m. and 5:30 p.m. Go directly to the garage in which you are interested — a guide will be present to answer questions.

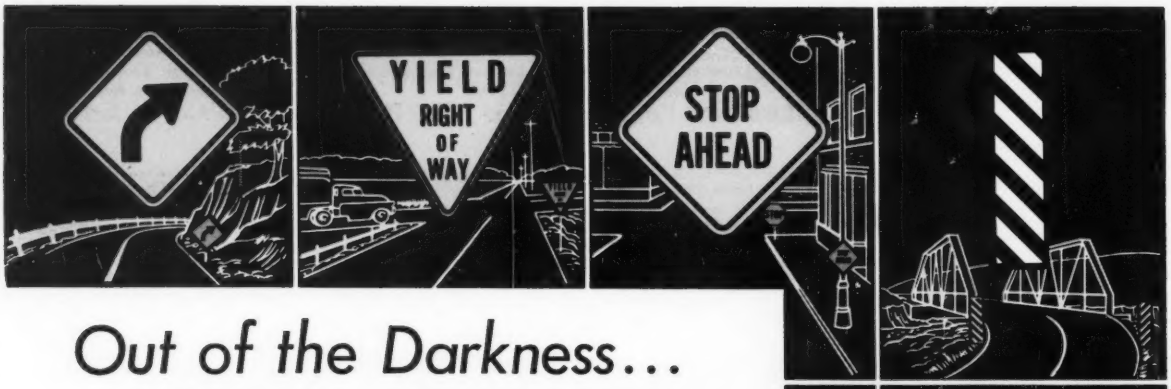


THIRD AVE. GARAGE



SKETCH OF ALLIES GARAGE

Two are open-deck ramp type structures featuring attendant operation. Mellon Square underground garage and surface park provides a garden spot in the heart of the Triangle. The new Allies garage is of a unique sloping floor construction featuring self-parking operation. At Diamond and Smithfield Streets, a new 7 level structure is nearing completion.



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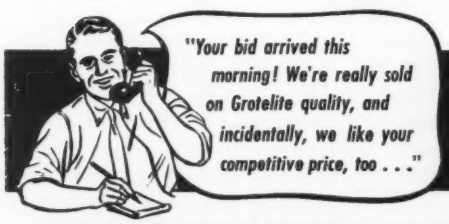
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Traffic Engineering

OFFICIAL PUBLICATION OF THE INSTITUTE OF TRAFFIC ENGINEERS

VOLUME 26 OCTOBER, 1955 NUMBER 1

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COVER: This photograph shows Pittsburgh's Golden Triangle as it will appear about 1960. Much of the work on Point Park, shown in the foreground, is now under way.

DEFINITION: Traffic Engineering is that phase of engineering which deals with the planning and geometric design of streets, highways, and abutting lands, and with traffic operation thereon, as their use is related to the safe, convenient, and economic transportation of persons and goods.

Published Monthly by the

Institute of Traffic Engineers

INCORPORATED

PUBLICATION office:
Interstate Printing Corp.
400 Watchung Avenue
Plainfield, New Jersey

EDITORIAL AND ADVERTISING offices:
Stratheona Hall
New Haven 11, Connecticut

Entered as second-class matter November 7, 1941, at the Post Office at Plainfield, New Jersey, under Act of March 3, 1879. ¶Single copies 40 cents, subscription price $3.50 per year in the United States; $4.75 per year to foreign countries. Other publications of the Institute of Traffic Engineers include Annual Proceedings, Traffic Engineering Handbook and Technical Bulletins.

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PARKING METERS

Frankly Speaking

TWENTY-FIVE YEARS AGO this month, on October 2nd, 1930, a group of nineteen engineers then attending a safety congress in Pittsburgh, assembled in a room at the William Penn Hotel to discuss the feasibility of associating themselves in a professional group for the purpose of promoting the science of traffic engineering. Before this meeting was concluded, the Institute of Traffic Engineers was founded. A tentative constitution was then approved and the following officers were elected:

Ernest P. Goodrich	President
Miller McClintock	Vice-President
Hawley S. Simpson	Secretary-Treasurer
Guy Kelcey	Board of Managers
Burton W. Marsh	Board of Managers

As indicated by the official minutes of this meeting, the following engineers in addition to the above elected officers were present: Messrs. W. Graham Cole, Maxwell Halsey, Harry H. Hemmings, Reyburn Hoffman, John Hurley, A. N. Johnson, Lewis W. McIntyre, Donald M. McNeil, Theodore M. Matson, I. C. Moller, Earl J. Reeder, Joseph G. Regan, L. Segoe, and Peter J. Stupka.

This month, October 24th to October 27th, inclusive, the Institute has scheduled its 25th Annual Meeting in the same Hotel in Pittsburgh, to honor these founders for their foresight in recognizing twenty-five years ago the need for such a professional group. The Local Arrangements Committee has prepared an outstanding program for this year's Annual Meeting.

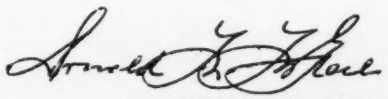
The achievements of the Institute of Traffic Engineers during these past twenty-five years are well known. This advancement is particularly significant when one considers the limited membership that was formerly available, the economic depression this nation encountered in the thirties, the changes and delays created by World War II, and the fantastic growth of the automobile during the last ten years. This month the Institute will have grown to a membership of close to 1,000 traffic engineers. It is now well constituted and organized to perform its rightful function for society.

It is not uncommon today to hear citizens commenting on the many delays they presently encounter during their normal travel. Unfortunately, many of these comments on traffic congestion are correct. There is still much to be done to cope with our present traffic volumes, and considerably more if we are to plan for the fifty percent increased growth in traffic volumes that can be expected during the next fifteen years.

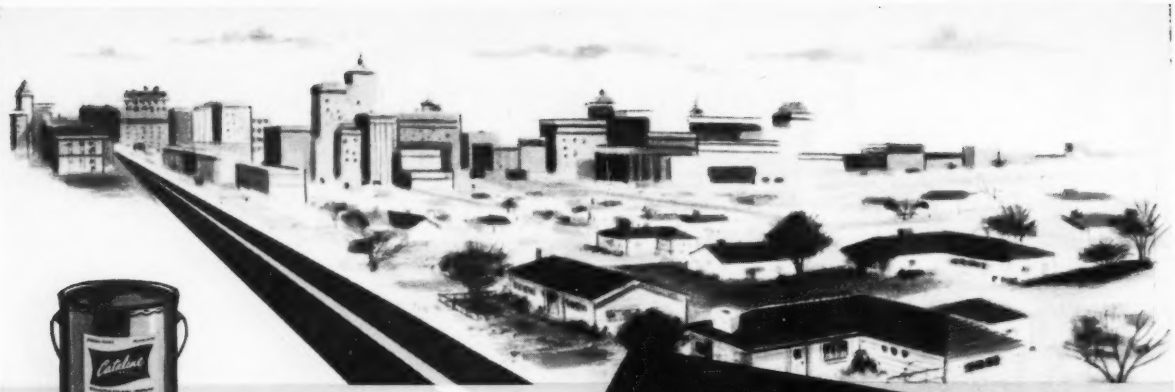
This is the job facing the individual city and state traffic engineer. By working collectively on research and technical matters, and making such knowledge known to all our members, considerable future progress will be made.

With this objective in mind, the Board of Direction of the Institute of Traffic Engineers has sponsored a "Work Conference on Evaluation of the Traffic Problem and its Future," to be held immediately preceding the 25th Annual Institute meeting so that a complete report and recommendations can be presented to the Membership at the Monday afternoon, October 24th, 1955 business meeting.

Don't miss the Founders 25th Birthday Meeting of the Institute of Traffic Engineers in Pittsburgh this October. Let's start out the next twenty-five years of the Institute with the same enthusiasm as that of our founders.



Immediate Past President



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The New Pittsburgh

By John J. Grove

Assistant Director, Allegheny Conference on Community Development
Pittsburgh, Pennsylvania

You will hardly recognize Pittsburgh when you arrive in the steel capital for the twenty-fifth anniversary convention of the Institute of Traffic Engineers on October 23-27, 1955.

An Impressive Welcome

FOR MANY MEMBERS of the ITE this will be their first visit to Pittsburgh since a far-reaching face-lifting program has changed not only the complexion but the physical aspects of this rugged industrial giant.

The Golden Triangle, financial, business and retail center of a Tri-State area serving over 6 million people and the focal point of the convention, has been drastically reshaped. Beginning at the forks of the Ohio River where Pittsburgh was founded in the 1750's, the city's redevelopment extends throughout the 330 acres of the central business district and into almost every other part of Pittsburgh.

As you enter the Golden Triangle, you will be impressed with the new skyline, with the gleaming stainless steel and aluminum skyscrapers that give Pittsburgh a dramatic new look. Since 1947, eight towering new buildings have been added, a ninth is in construction, and ground-breaking for the tenth will be underway before 1955 ends.

Before the redevelopment program started in 1947.

Progress as of 1955

Fig. 1

The New Point

At the historic 60-acre Point where the Allegheny and Monongahela rivers join to form the Ohio, two major projects are renewing this once commercial slum.

In the first 36-acres, the State of Pennsylvania is constructing Point Park which will restore the beauty of this historic tract of land where the English in 1758, under General John Forbes, defeated the French and determined the destiny of the American colonies as English-speaking. To date the State has spent almost $8 million in property acquisition, demolition of the outworn structures that stood there, and grading and landscaping.

You will see the piers on the north and south banks of the Monongahela river for the new double-deck Fort Pitt Bridge, part of the limited access highway which will carry routes No. 22 and No. 30 through downtown Pittsburgh.

A similar double-deck span—the Fort Duquesne Bridge—will be constructed across the Allegheny river, and an elaborate interchange will connect the two bridges and tie together the new street pattern in the Lower Triangle.

Through a Gateway Portal, the underpass beneath the Point interchange, the public will enter the section of the park closest to the rivers. No motor vehicular traffic will be permitted in this area.

The promenade circling the park has already been completed and many visitors and Pittsburghers are enjoying the sight of the towboats and barges plying their way through this river gateway. When the new double-deck bridges are finished, the two existing bridges will be razed and a great fountain will be built at the apex of the Point to symbolize the birthplace of the Ohio river.

Naturally, the old Fort Pitt Blockhouse will remain exactly where it is today, commemorating Pittsburgh's importance as the Gateway to the West.

Adjacent to Point Park is Gateway Center, built and developed by the Equitable Life Assurance Society of the U.S. This 23-acre tract was acquired for the Society by the Urban Redevelopment Authority of Pittsburgh. The Authority, established under the Pennsylvania redevelopment act of 1945, is a land assembly agency with power of eminent domain in city areas declared subject to redevelopment.

Fig. 2
Gateway Center in the Point Area—built by the Equitable Life Assurance Society through the Urban Redevelopment Authority of Pittsburgh.

To date Equitable Life has spent more than $43 million in the development of Gateway Center, including approximately $11 million for land acquisition and $32 million for the three skyscrapers housing some of the most notable names in American business. The State of Pennsylvania is building a 16-story office building which will centralize under one roof the Commonwealth's operations in the western part of the State. The Bell Telephone Company of Pennsylvania will erect a western headquarters building in this area.

Upper Triangle

The rejuvenation of the Lower Triangle created a momentum which soon resulted in major rebuilding in the Upper Triangle.

Fig. 3
The 41-story United States Steel-Mellon Bank Building—symbol of Pittsburgh's Resurgence.

A 41-story skyscraper, the 525 William Penn Place Building, is jointly occupied by the United States Steel Corporation and the Mellon National Bank and Trust Company. Just a block away is the 30-story Alcoa Building, headquarters of the Aluminum Company of America. Between them is Mellon Square, which will be completed by the time of the ITE birthday meeting in Pittsburgh. This picturesque Square, with six-levels of underground parking for 690 cars, will keep forever open a large part of the Upper Triangle and complement the State Park in the Lower Triangle. Two other important buildings face Mellon Square, the Oliver Building and the William Penn Hotel, headquarters of the convention. The exterior of both of these buildings has been cleaned and enhances immensely the attractiveness of this section of the Triangle.

Fig. 4
Mellon Square Park in the Upper Triangle with the Alcoa Building and William Penn Hotel rising majestically upward.

Nearby are two other new skyscrapers - the Hotel Carlton House and the Bigelow Apartments, first modern dwelling units to be constructed in the Triangle.

Public Parking Garages

In the June, 1955, issue of *Traffic Engineering*, William R. B. Froehlich, executive director of the Public Parking Authority of Pittsburgh, described Pittsburgh's bold attack on the parking problem and the efforts this city is making to solve downtown congestion. Since his article appeared in June, the Authority's fifth garage has been dedicated and opened to use. Called the Allies Garage, and located at the Boulevard of the Allies and Smithfield Street, it is a six-level structure accommodating over 525 cars and features self-parking. The sixth garage will be nearing completion at Diamond Street and Smithfield by the time the convention meets.

Fig. 5
The Saw Mill Run Boulevard interchange—an elaborate traffic separation on the Penn-Lincoln Parkway West affording a direct connection from the Triangle to the Greater Pittsburgh Airport.

Penn-Lincoln Parkway

The Penn-Lincoln Parkway—a 27-mile limited access highway, beginning in the eastern suburbs of the city and extending to the western outskirts, will be of particular interest to the traffic engineer. This expressway provides for direct access to the Pennsylvania Turnpike and the Greater Pittsburgh Airport. A project of the Pennsylvania Department of Highways, the Parkway is one of the most complex urban freeways ever constructed in this country. A detailed presentation on this project by H. G. Van Riper appeared in the August issue of TRAFFIC ENGINEERING magazine.

An eight and one-half mile section of the Parkway East has been in use for two years, and the Parkway West has been open since the fall of 1953. You will see the vital downtown link in construction. This complicated engineering involves cutting away of hillsides, relocation of streets and railroad tracks and involved ramp connections.

The Squirrel Hill Tunnels on the Parkway East, under one of the most densely populated residential areas of the city, have been acclaimed as among the finest motor vehicular tunnels in the United States. Many other complex engineering projects, such as the Edgewood Underpass which carries traffic on the Parkway East under the main tracks of the Pennsylvania Railroad and Swissvale Avenue will be of interest.

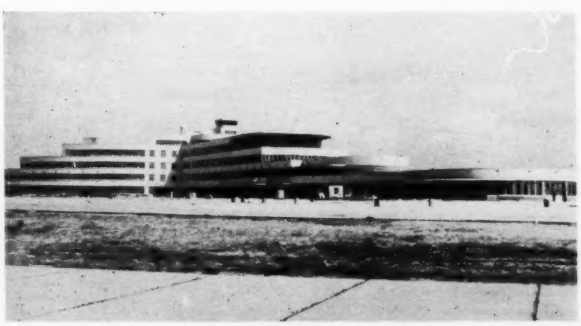


Fig. 6
Terminal Building of the Greater Pittsburgh Airport—a city within itself. Built by Allegheny County at a cost of $33,000,000.

Fig. 7
The Penn-Lincoln Parkway East and the Squirrel Hill Tunnels provide direct access from the Triangle to the Pennsylvania Turnpike.

Other Highway Projects

The highway phase of Pittsburgh's Redevelopment Program will cost more than $250 million. In addition to the completion of the Penn-Lincoln Parkway, the community is moving on such other major projects as the Pittsburgh Extension of the Ohio River Boulevard and the Sharpsburg-Etna Bypass which will provide a direct connection to the Allegheny Valley Interchange of the Pennsylvania Turnpike for routes No. 8 and No. 28.

A Crosstown Thorofare across the upper part of the Triangle will be built by the city and county. Fort Pitt Boulevard along the Monongahela river and Fort Duquesne Boulevard along the Allegheny have already been completed. With the completion of the Point Interchange in Point Park and the Crosstown Thorofare, there will be a marginal highway loop around the Golden Triangle which will make it one of the most accessible central business districts in the country.

Pennsylvania Turnpike

One of Pennsylvania's cardinal economic assets is the 327-mile Pennsylvania Turnpike, which crosses the breadth of the Commonwealth from Philadelphia to the Ohio line. Via Penn-Lincoln Parkway, it is only fifteen miles from the downtown district to the Pittsburgh Interchange of the Turnpike.

Because of the advantages the Pennsylvania Turnpike affords industries and businesses which ship largely via motor freight, Pennsylvania has gained new economic strength. In the economic planning now underway in the reorganized State Department of Commerce and in the recently established Regional Industrial Development Corporation for southwestern Pennsylvania, these advantages will be aggressively presented to business and industry.

Cultural Opportunities

Within three miles of downtown Pittsburgh is the Oakland Cultural Center, representing one of the most highly concentrated districts of its kind in the world. Often referred to as the Billion Dollar Cultural Center, it is the home of the Carnegie Institute of Technology and Carnegie Institute

Fig. 8
Carnegie Museum is famous for its Dinosaur Collection. Be sure and visit the Pittsburgh International Exhibition of Contemporary Painting in the galleries of Carnegie Institute's Department of Fine Arts—all under the same roof.

with its Carnegie Museum, Fine Arts Galleries, Music Hall and Library. Here, too, is Forbes Field where the Pittsburgh Pirates and Steelers play, Syria Mosque containing the largest auditorium in the city at the present time. The Pittsburgh Symphony Orchestra under the accomplished baton of William Steinberg and the Pittsburgh Opera, Inc., present their performances at the Mosque.

Nearby in Schenley Park is Phipps Conservatory, one of the largest public conservatories in the world. The annual Spring and Fall Flower Shows are among the most popular attractions of their kind and draw thousands of people from throughout the district.

The ITE convention is being held in Pittsburgh at a fortunate time because it will afford an opportunity for the members and wives to see the famous 1955 Pittsburgh International Exhibition of Contemporary Painting at Carnegie Institute. This exhibition presented by the Institute's Department of Fine Arts has always commanded world attention and attracted people from all parts of the United States and many foreign lands.

You will also want to see Carnegie Museum, one of the country's finest natural history museums. Famed for its dinosaur collection, the Museum has in addition other splendid exhibits such as Marine Hall which was featured earlier this year in Collier's magazine.

Expansion in Oakland

Dominating the Oakland area is the 42-story Cathedral of Learning, main building of the University of Pittsburgh. On the campus of the University you will see, too, many evidences of Pittsburgh's progress in educational and cultural development. A new science building is in construction across from the Cathedral of Learning. In the Medical Center the Schools of the Health Professions and the Graduate School of Public Health are adding a new dimension to the health resources of the Pittsburgh area. Plans for an impressive extension of the Children's Hospital are well along.

The land for this big expansion program in the Medical Center was acquired through the processes of urban redevelopment, with the institutions involved bearing the entire cost of property acquisition. Major street improvements will accompany this development, improving traffic flow, easing congestion and providing for a wide thoroughfare into the Cultural Center.

Carnegie Tech

Another growing institution located in the Oakland area that is also well known outside Pittsburgh is the Carnegie Institute of Technology. Growing physically and intellectually, Carnegie Tech has added several new buildings in the last five years including its ultra-modern Graduate School of Industrial Administration which is the first school of its kind among the institutions of higher education in this country.

Oakland Parking

With the growth and intensive development of the Oakland area, the parking problem has become increasingly acute. The Public Parking Authority of Pittsburgh and the Allegheny Conference on Community Development recently announced that they were sponsoring a comprehensive parking study of the area which could be the basis for a constructive program in this vital area.

WQED

One of the newer institutions in Oakland is the community television station—WQED on Channel 13. Pioneering in this unique medium, WQED has won acclaim for its High School on the Air course of study, bringing an opportunity for thousands of people within its wide reach to gain a high school diploma. Through its in-school program a powerful new technique is being introduced into the classroom. Safety program, "how to do it" and many other features designed to enrich living has already made Educational Television in the Pittsburgh area a household name. The studios of WQED across from the Cathedral of Learning will be open for inspection to any members of the Institute of Traffic Engineers interested in this unlimited media of education and entertainment.

Recreation

People in the Pittsburgh region work hard and play hard. Recreation is a necessity in their lives, and the community through local government, the state and private agencies has been enlarging and expanding these opportunities to an impressive degree since the redevelopment program started.

Through the Department of Parks and Recreation, City of Pittsburgh, the city's twenty-seven parks and playgrounds have been vastly improved and modernized. A new Aviary-Conservatory, a unique and unusual "birdhouse" which combines under one roof birds, trees, plants and flowers, has

Fig. 9
The Cathedral of Learning and Heinz Chapel of the University of Pittsburgh.

Fig. 10
Aviary-Conservatory on the North Side of Pittsburgh—one of the many new facilities built by the Department of Parks and Recreation, City of Pittsburgh.

been erected on the North Side of Pittsburgh and is open every day from 10 A.M. to 4 P.M. Here rare and exotic birds are free to fly about and seasonal floral displays, and natural habitat exhibits are on display.

In Schenley Park in Oakland is Phipps Conservatory, one of the world's largest public conservatories. This building is open daily from 9 A.M. to 5 P.M. and has an excellent collection of year-round permanent displays.

The Zoological Gardens in Highland Park ranks high among the zoos in this country. Its collection of animals, numbering more than 1,200 and representing over 300 species, is outstanding.

One of the most popular attractions at the zoo is the Children's Zoo, where nursery rhymes and mother goose tales come alive. Small visitors delight at exhibits dramatizing Noah's Ark, the Whale and other childhood classics. A miniature railroad was recently completed at the Children's Zoo, adding immensely to its popularity.

Smoke and Flood Control

Two key programs have been the foundation upon which Pittsburgh's Redevelopment Program has been based—smoke abatement and flood control.

The air pollution caused by the smoke from bituminous coal had made this dynamic industrial area comparatively unattractive as a place to live.

Since 1947, a fully effective smoke control ordinance has been in force in the City of Pittsburgh, producing remarkable results in cleaner atmosphere and changing the whole outlook for enjoyable living here. The official figures of the U. S. Weather Bureau show that during this period of time there has been a reduction of 85.5 percent in the amount of total smoke up to January 1, 1955; in the same period heavy smoke has been reduced 98.7 percent.

The striking effect has been, however, in the increase of the amount of sunshine falling on the community now that the smoke ceiling no longer screens out the rays of the sun, and in the cleaner living conditions that now exist.

In 1949, the Allegheny County Commissioners enacted a county-wide ordinance that is fully effective in the other 128 municipalities that comprise this county and extend the benefits of smoke control far beyond the city limits.

Like all river cities Pittsburgh has had its floods. In 1936, a serious flood on St. Patrick's Day caused millions of dollars worth of property damage throughout the Upper Ohio Valley.

Under the leadership of the Pittsburgh Chamber of Commerce, the Federal Government inaugurated a flood control program which has resulted in the construction of eight major dams in the watersheds of the Allegheny and Monongahela rivers. These reservoirs reduce the 1936 flood crest at the Point by about 10.1 feet.

The flood control program for the Upper Ohio Valley has not been completed and at least two additional reservoirs are needed to assure the kind of protection a rich industrial region such as this requires. The Pittsburgh Chamber is spearheading the effort to secure these reservoirs.

Fig. 11
Smoke control—keystone in Pittsburgh's amazing Renaissance.
Before smoke control in 1945 at the North Portal on the Liberty Tunnels. After smoke control in 1951 from the same angle.

Fig. 12
Mahoning Creek Flood Control Reservoir in the Allegheny River Watershed—one of eight dams that protect the Upper Ohio River Valley.

Mr. Sherman Voorhees, a member of ITE, has recently come here as the new executive director of the Chamber of Commerce of Pittsburgh and is now actively engaged in this phase of the Pittsburgh Program, as well as the many other fields of activities for which the Pittsburgh Chamber is responsible.

Gain in Valuations

The new major construction in downtown Pittsburgh has added immensely to property valuations in the Triangle and has increased appreciably the tax base and consequently the public revenue from realty sources.

Since the redevelopment program started in 1945, fifty-one new buildings ranging in size from the towering U. S. Steel-Mellon Building to modern one-story structures have been built in the Triangle. The total value of new buildings in Pittsburgh's central business district, including the parking garages built by the Public Parking Authority, is estimated at about $125,000,000. As a result of this new construction, assessed valuations in the Triangle alone have risen from $253,802,000 in 1948 to $308,015,000 at the end of 1954—an increase of about 21 percent in six years.

Future Plans

The planning function in the life of a great city is never completed. Through the course of time fine residential districts deteriorate, giving way to newer neighborhoods. Within business districts the inroads of decay and blight and plain old age take their toll.

Pittsburgh is rightly proud of the impressive achievements and accomplishments which have changed so drastically the face of this community during the past ten years. Pittsburgh, however, is not complacent or satisfied. Through its public and private planning agencies, it is moving forward with bold and imaginative plans which will eventually extend to every sub-standard section of the city.

Lower Hill

When the members of the Institute of Traffic Engineers return here in the future for another convention, a fine new auditorium and exhibit center will be available for their convention activities.

Adjacent to the Triangle toward the east is the Lower Hill—slum area where about 8,000 people now live. This area comprising about 95 acres will be cleared, and a new cultural, commercial and residential district will rise to replace the worn out structures that now deface this strategically situated tract of land.

The principal structure to be erected on this site will be a Combined Auditorium, which will serve as an amphitheatre, sports arena and convention hall. This arena will be built by the Public Auditorium Authority of Pittsburgh and Allegheny County through public and private financing.

Designed for all-weather, year-round usage, this unique structure calls for a retractable roof which will consist of rigid metal sectors operating fan-wise from a folded position at the rear of the building.

This movable roof makes possible an open-air amphitheatre for summer operettas. In the fall and winter with the metal roof closed, the structure is converted into a sports arena or convention hall.

A flexible and adjustable seating plan provides for a minimum of 7,500 seats for civic light opera productions, over 11,000 seats for sports events, and as many as 13,000 seats for conventions.

More than 60,000 square feet of space for exhibits and displays will be available without the use of the arena floor. With the use of the entire building for exhibit purposes, approximately 90,000 square feet of space will be available.

In addition to the arena which will occupy about 30 acres, the Urban Redevelopment Authority of Pittsburgh has earmarked a large tract for medium-income housing such as high-rise apartments situated in park settings. The Authority will seek to interest private housing contractors in undertaking this phase of the Lower Hill development.

Certain acreage in the area has been set aside for commercial development and other cultural usages.

The City of Pittsburgh has approved the Redevelopment Proposal for the Lower Hill and the Cooperative Agreement with the Federal Government. Negotiations between the Redevelopment Authority and the Housing and Home Finance Agency are now being concluded. The Authority expects to begin property acquisition this fall.

Come Again

Pittsburgh has made striking progress in the field of redevelopment and rebuilding since 1945 when the outlook here was bleak indeed. While much has been done, the planning for the future is even more dramatic and will require the full energies of the community to carry them out.

A pattern of partnership between local government and private enterprise working through the Allegheny Conference on Community Development has been established which has effectively advanced the whole community improvement program in Pittsburgh and Allegheny County.

We welcome the opportunity to have the members of the Institute of Traffic Engineers see The New Pittsburgh and cordially invite you to contact the official public agencies of government or the private organizations for whatever information on The Pittsburgh Program that may be helpful in your own community.

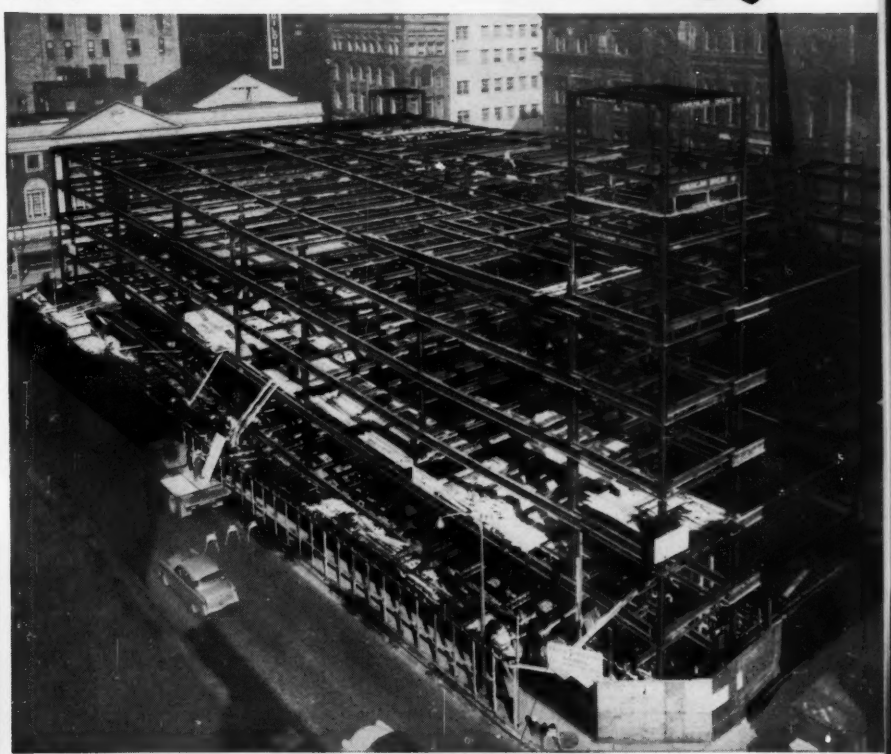
We also hope that this 25th Anniversary Convention will be memorable and that you will return here often in the future for other national conventions.

Fig. 13
Artist's conception of the proposed Lower Hill Cultural Center.

700 Tons of Steelwork for this unique 6-level rampless garage....

ERECTED IN JUST 5 WEEKS!

Allies Parking Garage
Public Parking Authority of Pittsburgh, Pa.
Planning Consultant:
Ramp Buildings Corporation
General Contractor:
Ragnar Benson, Inc.
Designed by:
Hoffman and Crumpton, A.I.A.
Leland W. Cook, Structural Engineer
Structural Steelwork by:
AMERICAN BRIDGE
Building is 6 levels, 120′ wide x 220′ long.
Erection of steelwork began Feb. 4, 1955, completed March 11, 1955.



Using high tensile bolts for field connections, AMERICAN BRIDGE makes quiet, speedy work of large mid-town structure

The Parking Authority of the City of Pittsburgh is answering the demand for new and better parking facilities by building one of the most unusual structures of its type to be found anywhere.

And by using steel-frame construction *field connected with high strength bolts,* the job is being handled so speedily and so quietly that folks on the street and in neighboring buildings are scarcely aware that a big new building is being constructed in their midst.

Erection started February 4, 1955 and was completed March 11, 1955 — an elapsed time of just *5* weeks!

Located on the corner of the broad Boulevard of the Allies and busy Smithfield Street in the heart of the Golden Triangle, the new garage is 120′ wide x 220′ long with six levels for drive-in parking. *The slightly tilted floors do away entirely with ordinary ramps.* It is designed with a center section 120′ x 125′ on slope and two level end sections 120′ x 47′6″. All connections were made with high tensile bolts. The 700 tons of structural steel framework was fabricated and erected by American Bridge.

The fast, uninterrupted and unusually quiet erection of this modern parking garage provides another strong argument in favor of steel-frame construction and *bolted field connections* for buildings of any type and size. For American Bridge crewmen can make tight connections with high-strength bolts as efficiently and speedily as less skilled personnel can handle the more common methods.

For detailed information regarding your requirements, please contact the office nearest you. Our engineers welcome an opportunity to confer with you.

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Panel Discussion on Shopping Centers

By Messrs.
Herbert S. Levinson (Assoc. Mem., ITE)
Associate Engineer, Wilbur Smith & Associates, New Haven, Connecticut
Edward A. Mueller (Jun. Mem., ITE)
Assistant Traffic Engineer, State Road Department, Tallahassee, Florida
and
William R. McGrath (Assoc. Mem., ITE)
City Traffic Engineer, New Haven, Connecticut
with
Moderator: M. Mansfield Todd (Mem., ITE)
Executive Secretary, Institute of Traffic Engineers, New Haven, Connecticut

For many years a vigorous discussion of professional matters has been going on in New Haven, Connecticut, as the staff members of the various traffic engineering organizations in and around the city have informally met almost daily for lunch. The number of diners varies from two or three to perhaps a dozen and the topics discussed during a single session nearly always range far and wide.

In the following article the authors have selected some of the more interesting, informative, and to some degree controversial, points made during the numerous discussions on Shopping Centers which have entertained the group from time to time. Mr. Mueller, formerly lunched with the group regularly while a Research Assistant at the Yale Bureau. During his three years with Wilbur Smith & Associates Mr. Levinson has been intimately concerned with the development of a number of large Shopping Centers. Mr. McGrath was likewise affiliated in some of these studies while employed by the Smith firm. The views expressed in the article are those of the authors as individuals and do not necessarily reflect the opinions or policies of their employers.—EDITOR.

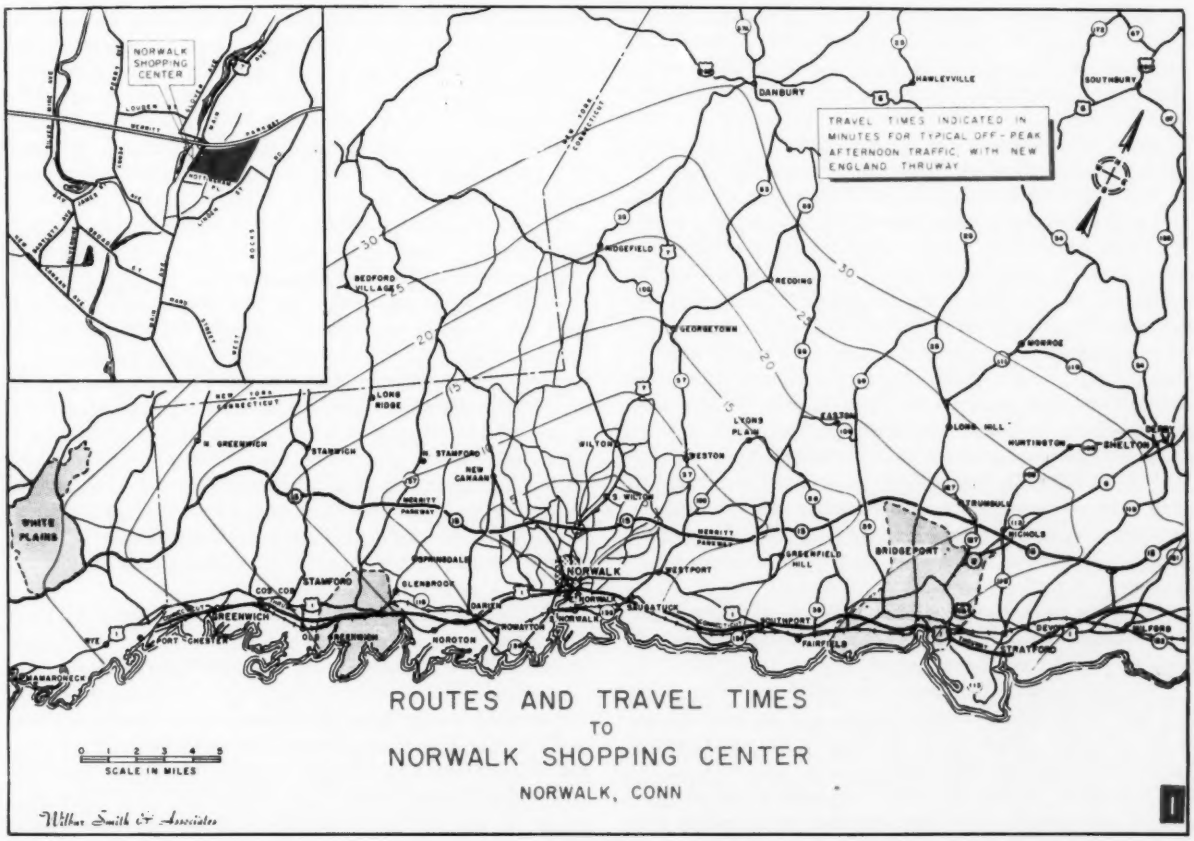

Fig. 1

". . . High type traffic facilities make many miles of the heavily populated areas as accessible to shopping centers as more sparsely populated areas."

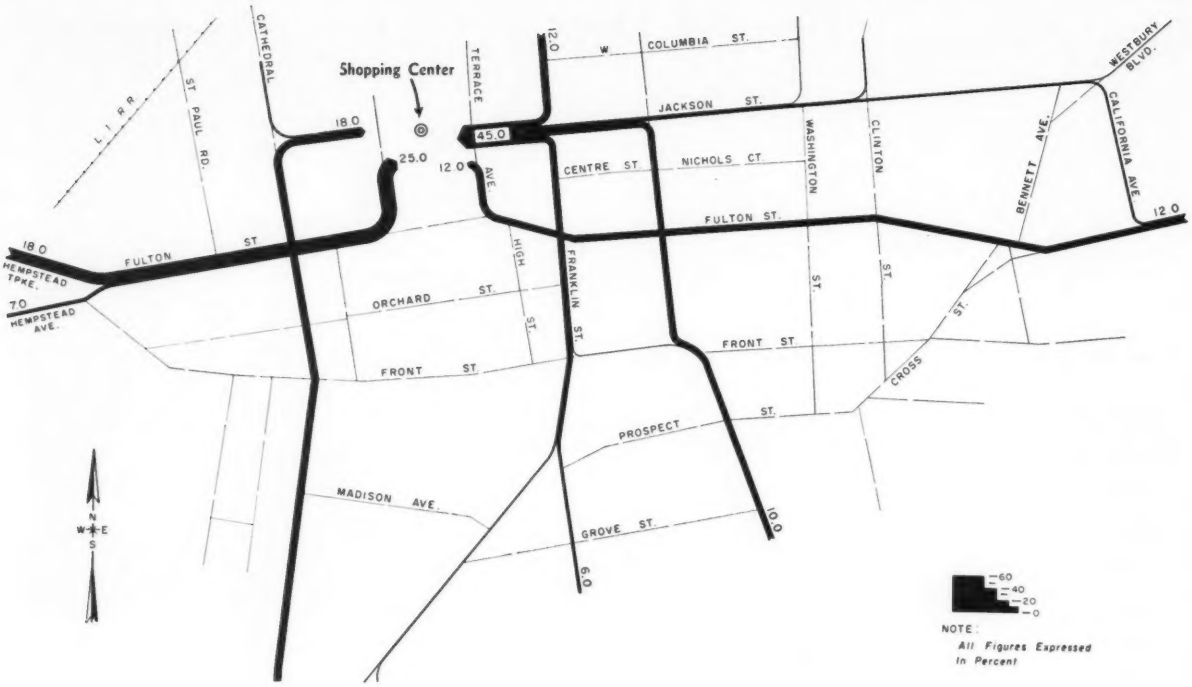

Fig. 2
". . . Potential shopper traffic will tend to seek out the easiest road to the shopping center from its origin."

MODERATOR TODD: The traffic engineer is becoming increasingly confronted with the problems of traffic and access at shopping centers. It is my understanding that you gentlemen have studied many of the aspects of this new merchandising medium we propose to discuss.

What is a shopping center? Why have they been developing so rapidly in recent years? Where do they locate?

MR. LEVINSON: The automobile has been instrumental in the suburbanization of our metropolitan areas: the growth of our suburbs is quite evident from a review of 1950 census figures. Suburban population was found to be increasing about five times as fast as urban. It is understood that this rate has since accelerated. Stores have migrated to the suburbs because that is where the expanding market is. Shopping centers provide the retail outlet for growing suburbia. Planned shopping centers are a new concept of modern retailing adapted to the suburbs and the automobile; they are based on planned, constructive decentralization.

MR. MUELLER: Shopping centers may be regarded as small, self-contained business districts that cater primarily to shoppers. They are generally under the control of one party, either an individual developer or a group of interests acting in unison.

Shopping centers are divided into three types: neighborhood, community and regional, depending on the services provided and the number of people served:

Neighborhood centers generally consist of grocery stores and drug stores. These centers are small and are located close to the consumer. They largely depend on the same persons shopping several times per week.

Community centers sell some shopping goods in addition to convenience goods, and concentrate on weekly one-stop shopping.

Regional shopping centers focus about large department stores, and attempt to duplicate the shopping facilities of our downtown areas. They usually contain from forty to one hundred stores and may range up to a million square feet in area. They predominantly sell general apparel and furnishings. Banking, special services, and office buildings are occasionally included in the center. Traffic wise, they are the most interesting, in that their traffic problems are considerably more complicated than those of smaller centers.

Shopping centers are also classed by building groupings such as strip, court, cluster and mall. The cluster and mall types are well adapted to larger centers.

LEVINSON: In short, well planned shopping centers take advantage of the mobility that the automobile affords shoppers. They provide attractive access, ample parking areas that are conveniently located around the stores, separation of principal pedestrian and vehicular traffic streams and service areas that are generally screened from view. Planned regional shopping centers are compact and afford a continuity of related functions. Balanced merchandising and architectural harmony make them pleasant places in which to shop.

TODD: I'd like to confine our discussion to the large regional centers. It seems obvious that attractive access should be a paramount consideration.

MUELLER: Even large shopping centers find it difficult to provide the range and choice of merchandise that is found in the central business districts of our metropolitan areas. It is difficult for merchandising, per se, to attract consumers to suburban shopping centers. Studies by Professor Jonassen at Ohio State University show that the principal reasons people like suburban centers are associated with convenience and traffic factors. That is, the centers are closer to home, easier to park in, easier to travel to, and, in some cases, have more convenient shopping hours. Shopping downtown was found to have the advantage of the huge merchandising

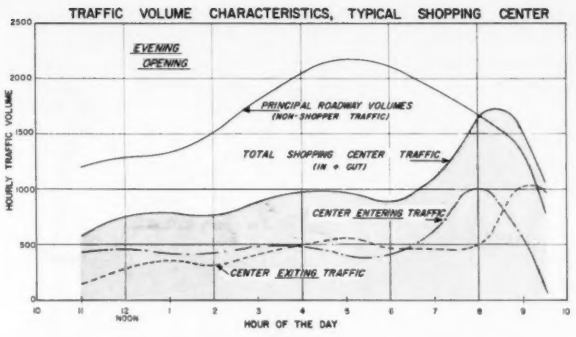

Fig. 3

". . . It is fortunate that the peak shopper traffic comes after the normal highway peak hour."

selection and the disadvantages of traffic and parking congestion. A large number of people are required to make any merchandising endeavor successful whether it is a downtown or suburban area; and conversely, it takes attractive merchandising at any area to induce people to buy.

LEVINSON: The success of shopping centers depends on not only merchandising qualities and architectural attractiveness but also on their accessibility to market areas. All portions of the trade area must be connected to the centers by easy routes of travel. Sites must be accessible to mobile auto-borne clientele. Regional shopping centers tend, therefore, to develop at focal points within their trade areas, usually at intersections or at junctions of key traffic ways. Often these roads are constructed to high type standards and provide attractive traffic services in terms of time and distance. Frequently, grade separations are developed at their major intersections. It is not uncommon to find large shopping centers in proximity of traffic interchanges. Such mammoth shopping centers as Roosevelt Field, Long Island, Cross County Center, Westchester County, New York, the Paramus Shopping Centers, Paramus, New Jersey, and the projected North Shore Center, Peabody, Massachusetts, are located near high type controlled access facilities.

MR. McGRATH: It is my understanding that the traffic engineer is always one of a comprehensive shopping center design team. Other members include site planners, architects, landscape specialists, construction personnel, real estate agents, and market analysts.

MUELLER: This is generally the case. The studies of the market analyst are of special interest to the traffic engineer and have an important bearing on traffic analyses. These economic studies evaluate the trade area: its extent, character, and potential as related to the site under consideration. Some market analysts use merchandising theorems, such as Reilly's Law,* in determining the potential of a site; others may apply factors based on studies of the area, real estate judgment, etc.

TODD: How do traffic engineers fit into the picture?

LEVINSON: It is the primary objective of traffic engineers to provide attractive and equitable highway transportation services for all road users on the approach roads serving shopping centers. An integrated system of traffic operations must be attained. State and highway officials, as well as the traffic engineers working for developers, realize that if access becomes difficult, either because of circuitous routing, sustained congestion, or traffic hazards, the center can seriously suffer.

McGRATH: From the standpoint of a city traffic engineer, it is very essential that there be no congestion in the environs of a center. Surely, congestion is not politic.

TODD: In the development of traffic and access plans for a shopping center, where do you begin?

LEVINSON: A careful study of the market area is required to answer such pertinent questions as: (1) How accessible is the site from the various communities in the trade area? (2) How will patterns of population and economic activity change? (3) Which roads will be sought out by shoppers, now and in the future?

MUELLER: Much of the basic information about the trade area is developed by market analysts. They delimit and determine its potential usually using driving time to define the market area. The primary market area of large centers includes localities about fifteen minutes away, however, the "pull" generally extends at least to a half hour's driving distance.

LEVINSON: Driving times are more realistic appraisal of automotive accessibility than distance. This is readily apparent from any time contour map (see Figure 1). Travel times are affected not only by distance but also by the caliber of the road net. It is evident that high type traffic facilities make many heavily populated areas as accessible to shopping centers as more sparsely populated areas.

In addition to exploring the trade area, a reconnaisance must be made of the proposed site. Its relation to the approach road net, its exposure to existing traffic, its proximity to residential areas, and present traffic operation in its environs, should be evaluated from field studies.

MUELLER: The market analysis is a type of origin-destination survey. It generally determines the number of expected customers, their dollar volume of business, and their origins. The sales, or "effective customers", of each community within the trade areas generally form the basis for traffic assignments. Potential shopper traffic will tend to seek out the easiest road to the shopping center from its origins. (Figure 2.)

TODD: Most of the traffic ways in our suburban areas will be heavily traveled during peak hours. How do they react when subject to additional loadings from shopping centers? Do shopping traffic peaks generally occur concurrently with peak highway rush hours?

MUELLER: Shopping centers are generally open several evenings. They attract their largest crowds during these evening openings. Saturday afternoon is also quite important as a peak shopping period. It has been found, however, that evening openings generate the heaviest shopper traffic loads.

McGRATH: The increasing popularity of evening shopping is quite evident in the central business district in New Haven. For example, some shopping nights (Thursday) created traffic and parking problems which sometime exceed those occurring at other times, including rush hours.

LEVINSON: There are several peak periods for which we study traffic conditions at regional shopping centers. These are the "peak highway rush hour" which generally occurs between 4:30 and 6:00 P.M. and the "peak shopping center traffic hours" for evening openings that occur between 7:00 and 9:00 P.M.

MUELLER: It is interesting to note, that, depending on the size of the center, the combined loadings developed by

* (As used in Shopping Centers) "Retail shopping centers in a metropolitan area attract trade from the communities in the area in direct proportion to the shopping goods presented at the center and in inverse proportion to the square of the driving time between the centers and communities."

shoppers and other highway traffic movements during the peak shopping hours are often as great as those developed during the highway rush hour periods. It is fortunate that the peak shopper traffic comes after the normal highway peak hour. Figure 3 indicates traffic volume characteristics at a typical shopping center.

LEVINSON: The generation of traffic to a shopping center is related to its effective size in terms of square feet of gross floor area. About twenty cars per day can be expected to visit a regional shopping center for each thousand square feet of gross floor area. Smaller centers catering primarily to convenience goods, and containing large food stores might generate a greater unit movement because of the high-turnover type demand. Some of our larger shopping centers (approximately 1,000,000 square feet) attract as many as 50,000 persons on typical shopping days. A study conducted at Shopper's World, Framingham, Massachusetts, a regional center of approximately 350,000 effective square feet of gross floor area, revealed that over 6,500 vehicles entered the center on a typical shopping day when the stores were open evenings.

MUELLER: It is important to remember, that, while there are pronounced directional characteristics of ingress and egress movements at centers, complete unidirectional tendencies hardly ever exist. There are always people leaving a center even during the heaviest ingress periods. A peak evening entrance hour will generally have about twice as many vehicles entering the center as during any other hour throughout the rest of the day. In this regard, the peak exit hour would roughly follow the same characteristics, with a slightly greater peak.

TODD: It is evident that shopping centers are sizeable traffic generators. How is the traffic that they generate related to the existing flows on their surrounding streets? Is it not true that this must be known before problems of accessibility, traffic capacity and adequacy can be determined?

LEVINSON: It is essential that shopper traffic be related to existing highway traffic projected to the year that the center under consideration will be in operation at its planned productivity. This is accomplished as follows: First, directions of approach of shopper traffic are determined. These are based on the relative patronage of the communities within the trade area as anticipated by the market analyst and related to the transportation services (i.e., bus, car, etc.) that are afforded by the surrounding road net. Second, shopper traffic for typical peak hours is assigned to the approach roads in accord with the market distribution. Third, present traffic volumes are projected to the desired year in accord with their normal growth characteristics. These loadings are corrected for new highway or land developments that often occur in their zone of influence. Fourth, some highway traffic would, of course, be attracted into the center. These flows are deducted from non-shopping traffic. Finally, shopper and highway traffic are added together to determine the composite traffic flow patterns on the roadways surrounding the centers.

MUELLER: These flow patterns clearly reveal the importance of the various boundary roadways. A typical flow pattern for a New England regional shopping center, currently in operation, is depicted in Figure 4. Shopper traffic constitutes a very considerable portion of the total roadway flows, particularly during peak shopping hours.

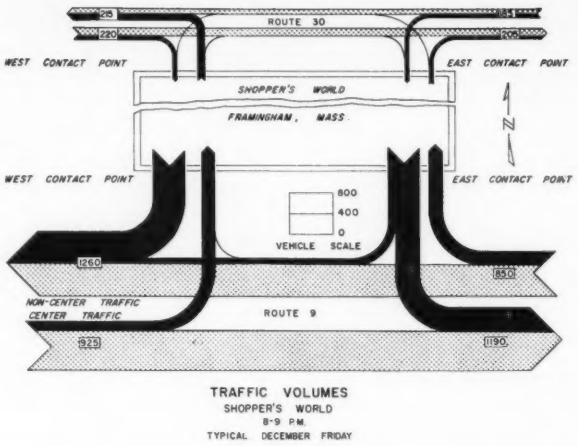

Fig. 4

". . . Shopper traffic constitutes a considerable portion of the total roadway volumes, particularly during peak shopping hours."

McGRATH: The design values used for any given shopping center should also take into consideration the amount of "walk-in" and transit patronage that can be expected.

TODD: How much parking should be provided at a regional shopping center?

LEVINSON: The amount of parking needed would, of course, depend on the size of the center, the type of stores, and the patron dependence on private automobile transportation. In practice, however, the land available for parking is usually the governing factor. Parking needs are generally expressed by parking index: parking index of one corresponds to the provision of one parking space for every thousand square feet of gross floor area. Gross floor area includes selling and storage space, but eliminates truck loading areas, power plants, etc.

MUELLER: If only mid-week day openings are to be considered, then a parking index of three or four would be sufficient. Timewise this constitutes over 50 percent of the shopping days in a year. A parking index between five and eight will provide sufficient parking capacity for Fridays, Saturdays, and evening openings.

An index of eight is generally sufficient to accommodate peak pre-Easter and peak sale days. It will generally accommodate over 95 percent of the shopping days in the year and will provide sufficient parking capacity for virtually all shopping conditions. Peak shopping periods on pre-Christmas shopping days usually generate parking demands which are in excess of this index.

An index of four cannot be considered as adequate because it would not provide sufficient parking capacity for evening openings. It must be remembered that evening shopping is becoming increasingly important in regional shopping centers.

In summary, the more parking that is provided, the better. Even provision of fifteen cars per thousand square feet of gross floor area is considered desirable by some authorities to meet peak annual shopping days, but land limitationhs generally preclude providing such a generous index. Most experts believe an index of eight or more to be adequate for the average regional center.

It should be noted that a parking supply in excess of seven or eight cars per thousand square feet of gross floor area can be removed farther from the stores, and be less attractively designed. This is often called "overflow" parking.

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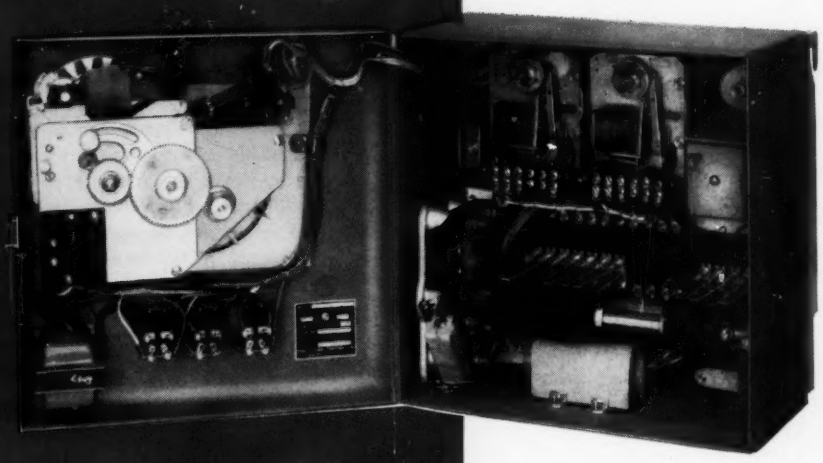

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Fig. 5
". . . Planned shopping centers are a new concept of modern retailing adapted to the suburbs and the automobile."

Consideration should, of course, be always given to possible future expansion of the center.

TODD: How do we adapt our design and capacity criteria in developing a traffic and parking plan for a shopping center?

LEVINSON: In planning the design and operations of the centers sufficient road capacities must be provided to accommodate the anticipated traffic demands. Highway routes and other approach roads serving existing and planned centers should be improved as required. The extent and character of the improvements depend, of course, on the size of the centers and the traffic sufficiencies of the existing road nets. Many improvements are minor and can be effected by merely revising controls and regulations. Others are extensive and sometimes involve the construction of new approach and connector roads. For example, at Roosevelt Field, Long Island, a cloverleaf interchange has been developed between the center and a new limited access parkway.

It must be realized that improvements are necessary on most systems of approach and boundary roads that serve regional shopping centers or other large traffic generators. Many of the improvements often have to be made even if the centers are not built and are generally in accordance with planned highway modernizations. It is important that all improvements be developed as part of a comprehensive plan.

MUELLER: Improvements are generally effected at points of ingress and egress into the center, as well as in the approach and boundary road net within its zone of influence.

LEVINSON: Shopping center contact points should permit easy and attractive movements. Lanes should be of adequate width; ample radii should be provided. The separation of conflicting entrance and exit movements permits basic two phase signal operations on boundary roads, thereby reducing delays and affording high traffic capacities. Acceleration, deceleration and left turn storage lanes should be provided on all boundary roads so that shopper traffic does not unduly interfere with other road users. Movement must be made safe, natural, and attractive for lady shoppers who are the principal patrons of shopping centers. Left turn storage lanes, for example, are important not only to eliminate delaying effects to through traffic, but to protect waiting vehicles.

MUELLER: Traffic signals are often required at principal contact points along major boundary roads. The use of semi-actuated equipment, coordinated for progressive movements will minimize the incidence of stoppage to highway traffic, particularly during periods when shopping traffic is light. In locating contact points, full consideration should be given to their "time-space" position along boundary roads.

TODD: Highway departments on occasion seem reticent toward utilizing "directional designs" which I understand are becoming quite common in planning of shopping centers. What is directional design?

LEVINSON: Directional design endeavors to provide highway access facilities in accord, insofar as possible, with road user desire lines of travel. The state of New Jersey Highway Department has successfully employed "directional design" principles at several major intersections. Direct connection grade separations are a high type application of this design.

MUELLER: A 90° "T" intersection between a boundary road and a shopping center, that permits all movements, is essentially non-directional in character. Its directional design analogy would be two contacts, each oriented toward principal patron directions of approach. Directional design might require additional signalization and new breaks in medians. However, it separates conflicts (particularly between the various shopper traffic movements) reduces delays and increases capacities. It dispenses traffic entering the shopping center and reduces the possibilities of tie-ups onto boundary roads.

TODD: I would suppose that there is a very definite interrelationship between the internal traffic circulation system and the contact treatments. Does the internal traffic plan fix the location of the buildings or conversely?

MUELLER: Architectural, site planning, and merchandising factors, as well as traffic determine the location of the buildings. The buildings should be located so that the maximum amount of pedestrian traffic is "pulled" past the stores. In this regard many problems arise such as where should the department store be placed? Should it dominate the center?, etc. Central groupings of buildings are becoming more popular in large shopping centers; trafficwise this is a desirable objective.

LEVINSON: A regularly shaped parcel of land with a central grouping of buildings generally reduces walking distances, equitably distributes parking, and simplifies traffic circulation. (Figure 5.)

In larger centers, a circumferential or ring road should be provided, completely insulated and removed from public roadways. It should connect parking areas with points of ingress and egress thereby distributing traffic to all the parking areas and equalizing the accessibility of all sides of the center.

In developing parking areas consideration should be given to "ease of parking" without unduly reducing capacities. Parking bays should be oriented around the stores so that customers are not required to walk excessive distances or to cross heavy traffic roadways; it should be possible to use aisles as direct pedestrians walk-ways to the center proper.

TODD: What angle of parking should be employed at shopping centers?

MUELLER: This is a difficult question to answer categorically. It is essential that abundant parking areas, with generous unit dimensions be employed; the angle of parking that is utilized such as 45°, 60°, or 90° is generally of secondary importance. There are proponents of both 90° and angle parking, both types have their advantages and disadvantages.

LEVINSON: In small centers, where distances are not too great, there is little to be gained from one type over the other. However, as the aisles become longer, two-way circulation in aisles becomes increasing desirable; this can be best attained with 90° parking. Advantages attributed to 90° parking include:

a. Greater parking capacity.
b. Two-way movements in aisles creating no enforcement problems when empty nor requiring barriers between aisles.
c. Shorter cruising distances.
d. Less misdirection of parking.

Advantages attributed to angle parking are:

a. Greater simplicity and ease.
b. Elimination of potential head-on conflicts.

MUELLER: The increase in unit parking dimensions in recent years has certainly increased the ease of parking. Parking spaces have gradually increased from 7½ feet to 9 feet in width. Unit parking depths have increased from 58 to as much as 65 feet!

McGRATH: The discussion on shopping centers has been very enlightening. What can we city traffic engineers learn from shopping centers? How can we apply or adapt their principles and techniques to the revitalization of our downtown areas?

LEVINSON: The Urban Land Institute states that "Downtown areas are holding their dominant position by reason of the pulling power built up during the mass transportation era. Whether this magnetism will continue depends on the central business district's ability to safeguard its wide selection of goods and concentrated purchasing power. The real resource of downtown is the crowd: the shoppers, the workers, the transients, and the public seeking services. Established business districts must not only look to their laurels, they must initiate positive corrective action."

Accordingly, if a downtown could be converted into a "shopping center", it would have many advantages over outlying shopping centers. It would then have the same pleasant shopping atmosphere and ease of access, *and* superior merchandising qualities. Vehicular traffic could possibly be removed from the main shopping street in the downtown area which would be transformed to an attractive pedestrian way. Nearby parking areas connected to surrounding roadways would provide the necessary access. We would achieve a specialization of street functions in the central business district as compared to the conglomerate uses that now exist.

MUELLER: Preliminary studies have been developed for such communities as Evansville, Indiana; Appleton, Wisconsin; Englewood (Chicago), Illinois; and Baton Rouge, Louisiana. The projected Back Bay Center, Boston, and the Tulsa Civic Center embody many of the basic shopping center concepts which we have discussed here.

McGRATH: This is a very interesting idea which probably should be explored further. Won't the expressways we're now building near central areas with properly integrated parking, perhaps interposed between expressway and shopping area, achieve these objectives?

LEVINSON: Expressways correlated with peripheral parking are a step in the right direction. It must be realized that the conversion of downtown into a shopping center cannot always be simply or readily effected. It is not an inexpensive, overnight solution; it is not an "immediate answer" to the downtown problem. Rather, it is a very desirable planning objective to which we should gear our future plans for downtown, being fully cognizant that the final design solution may not be accomplished for twenty or thirty years!

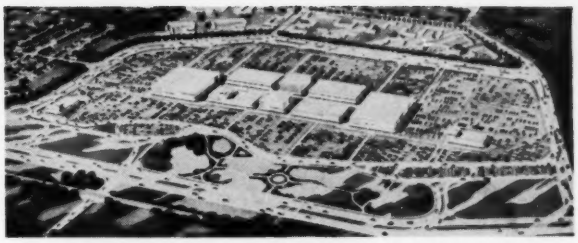

Fig. 6
". . . A regularly shaped parcel of land with a central grouping of buildings generally reduces walking distances, distributes parking demand and simplifies traffic circulation."

The first step would be the envisionment of the final plan for a downtown area, appraising the existing street and land use patterns in its light. It is important to study conditions of buildings, and availability of services and utilities which would be affected by possible street closures.

The second step would be the initiation of the phases of the plan that can be readily effected. Often this entails institution of one-way streets, development of new related parking areas and modernization of traffic controls. The third step would be to extend the construction of off-street parking areas in relation to the key circulation one-way streets. The fourth step would be to develop major highway distributors and connectors such as expressways around the downtown area integrated with a continuing reclamation of land and extension of peripheral off-street parking. The fifth and final step would be the conversion of main shopping streets into attractive pedestrian ways with the provision of the necessary pedestrian amenities.

In retrospect, it isn't an easy objective and isn't a plan that can be universally applied. It is a concept that our urban areas should fully consider in what might be a recentralization answer to the new and rapidly expanding regional shopping centers.

TODD: I am sorry that it is necessary to bring to a close this stimulating discussion of a very complex subject embracing a great many aspects of urban economics and urban planning. It could well be the topic for a subsequent panel.

In summary, shopping centers are an outgrowth of the decentralization of our urban areas. They have changed our urban landscape; problems inherent with change have developed. Their planning and design embodies new concepts of traffic, architecture and economics.

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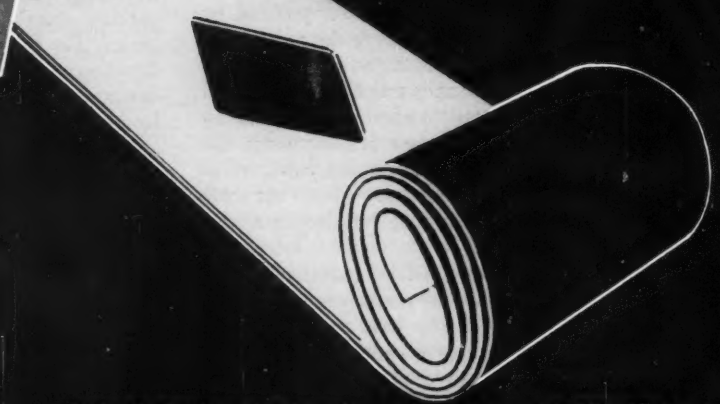

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Safety on the New York State Thruway

By Arnold G. Fisch (Assoc. Mem., ITE)
Traffic and Safety Engineer, New York State Thruway Authority
Albany, New York

Fig. 1
The New York State Thruway—built to the highest standards of safety engineering.

This paper was presented in April of this year before the Greater New York Safety Council.—EDITOR.

Introduction

SINCE SAFETY CANNOT BE ISOLATED and discussed independently of other features, I shall discuss safety on the Thruway as related to the design and construction features of the Thruway, the maintenance and operation of the highway, and the Authority program of research and inter-agency cooperation.

Design and Construction Features

Only so much "safety" can be built into any highway. Highway designers have been trying, with some success, for many years to make it harder for the thoughtless or irresponsible motorist to kill or maim himself and others on the road. But the spectre of the careless or carefree driver continues to haunt the all-out efforts of the best highway engineers.

Advances in design and improved equipment on the motor vehicles themselves, including better brakes, steering mechanisms, and better tires, have helped to make driving safer; but these advantages have been offset to a considerable extent by the higher speed of the more modern vehicles, the deteriorating conditions of existing highways, and the ever-increasing concentration of vehicles using our roads.

Fig. 2
Natural barrier being used as the medial strip.

Fig. 3
A deceleration lane at one of the many interchanges.

The greater ease of driving also has meant that many motorist give less attention to the task of driving.

Safety was a prime consideration in the design and construction of the New York State Thruway. The efforts of Thruway planners and engineers were reflected on the credit side in the statistics of the first 96,000,000 vehicle-miles of travel on the cross-state expressway, when no traffic fatalities occurred. As of December 13, 1954, the record stood at over 205,000,000 vehicle-miles of travel with three fatal accidents resulting in death to five persons, a fatality rate of 2.44. The corresponding rate for all New York State highways for 1953, the latest year for which figures are available, was 6.1.

Let us examine some of the physical features of the Thruway that point toward safer driving. The Thruway comprises a limited access expressway system, built to the highest standards of safety engineering. There are no intersections at grade, no steep hills, no sharp curves, none of the hazards usually found on regular highways.

The Thruway is a four-to-six lane concrete superhighway, with a wide mall separating the opposing traffic arteries. The center mall varies from a minimum of 20 feet to as much as 800 feet. Mall widths of several hundred feet are found at many locations along the route between New York City and Buffalo. In many cases, original trees and shrubbery have been left in the mall to form a natural barrier to the accidental crossing of the medial strip by vehicles traveling in opposite directions. In other places, rock formation, hills and other natural barriers have been left in the traffic lane separations. The opposing lanes have been placed at different elevations where the terrain lends itself to this desirable type of construction.

The variable center mall serves three main purposes. It minimizes the danger of head-on collisions, it reduces headlight glare from oncoming traffic, and it relieves the monotony of hypnosis that may develop when a motorist travels along straight, parallel, uninteresting pavement.

The grade of the pavement is never more than three percent, a rise or fall of three feet for every 100 feet traveled. These gentle hills eliminate the dangers and delays of steep climbs, and help nullify excessive speeds normally built up on long, steep downgrades.

The curves on the Thruway also are gentle, designed to make it easier for the motorist to guide his vehicle along the route. Expressed as an engineering standard, the maximum degree of curvature is two degrees. equivalent to a minimum radius of curvature of 2800 feet. At some places, curves have been used intentionally where not actually needed, in order to help the driver maintain interest and concentration in the operation of his vehicle.

This combination of flat grades and wide curves results in an unobstructed field of vision of over 1000 feet ahead of the motorist at all times.

The pavement width, itself, was designed to promote safe driving at expressway speeds. The regular four-lane Thruway comprises a 12-foot and a 13-foot lane in each direction. The right-hand, or travel lane, is 12 feet wide and the left-hand or passing lane is 13 feet wide. This extra foot of width gives motorists an added feeling of security especially when passing large commercial vehicles.

Another safety provision is the incorporation of acceleration and deceleration lanes wherever the motorist may enter or leave the system. The 1,200-foot deceleration lanes are placed to the right of the regular pavement at the approach of each interchange exit ramp, and in advance of the entrance to each service area, where the motorist may stop for food, fuel, and rest. These extra lanes give the motorist ample time in which to leave the normal traffic stream and then slow his vehicle to the posted 25-mile-per-hour rate required to negotiate the inner loops of the interchanges or access roads. Similarly, 1,200-foot acceleration lanes are provided at each point where vehicles enter the Thruway in order to give motorists space in which to bring their cars to normal operating speeds and merge with main-line traffic without causing a bottleneck. In addition to the wide pavement lanes, a ten-foot wide stabilized shoulder is provided along the entire Thruway. This added space is used for disabled vehicles, so that there will be no stopping on or obstructing the travel lanes.

The absence of intersections at grade is another contributing factor to safety on the Thruway. When completed, there will be 507 structures between New York City and Buffalo, most of them carrying local highways over or under the expressway. The lack of intersections also eliminates the need for traffic lights, and the resultant traffic tie-ups at such locations. All thruway structures have been specially designed to keep motorists from instinctively veering away from the supporting columns when they pass. The foundation piers

Fig. 4
Four of the 507 structures between New York City and Buffalo.

for the bridges are relatively slim, and most of them are rounded. This lets more light into the underpass area and reduces the noise of the vehicle passing underneath the bridge.

To preserve the limited-access feature of the Thruway and prevent the entrance of pedestrians and small animals onto the right-of-way, large sections of the Thruway are now being fenced. In developing areas, where there is danger of small children wandering onto the expressway, chain-link industrial type fencing is being used.

Another construction safety feature is the control of outdoor advertising. This provides for maximum visibility along the Thruway system and connecting roads or highways by preventing unreasonable distraction of operators of motor vehicles or confusion with regard to traffic lights, signs or signals or otherwise interfere with the effectiveness of traffic regulations.

With these "built-in" features, the Thruway is basically a safely constructed road. To keep it that way, the Thruway Authority has provided a variety of operational safety features.

Operating Features

The operating features which contribute to the inherent safety of the highway include the traffic rules and regulations, the State Police patrol, the communications system, the emergency service patrol, adequate warning, regulatory and direction signing, temporary and permanent service areas, a high level of maintenance and provision for ambulance service and fire protection.

Regulations adopted by the Authority which were designed to promote safety include a differential speed limit for passenger cars and commercial vehicles, the restriction of all stopping except for repairs, the prohibition of U-turns

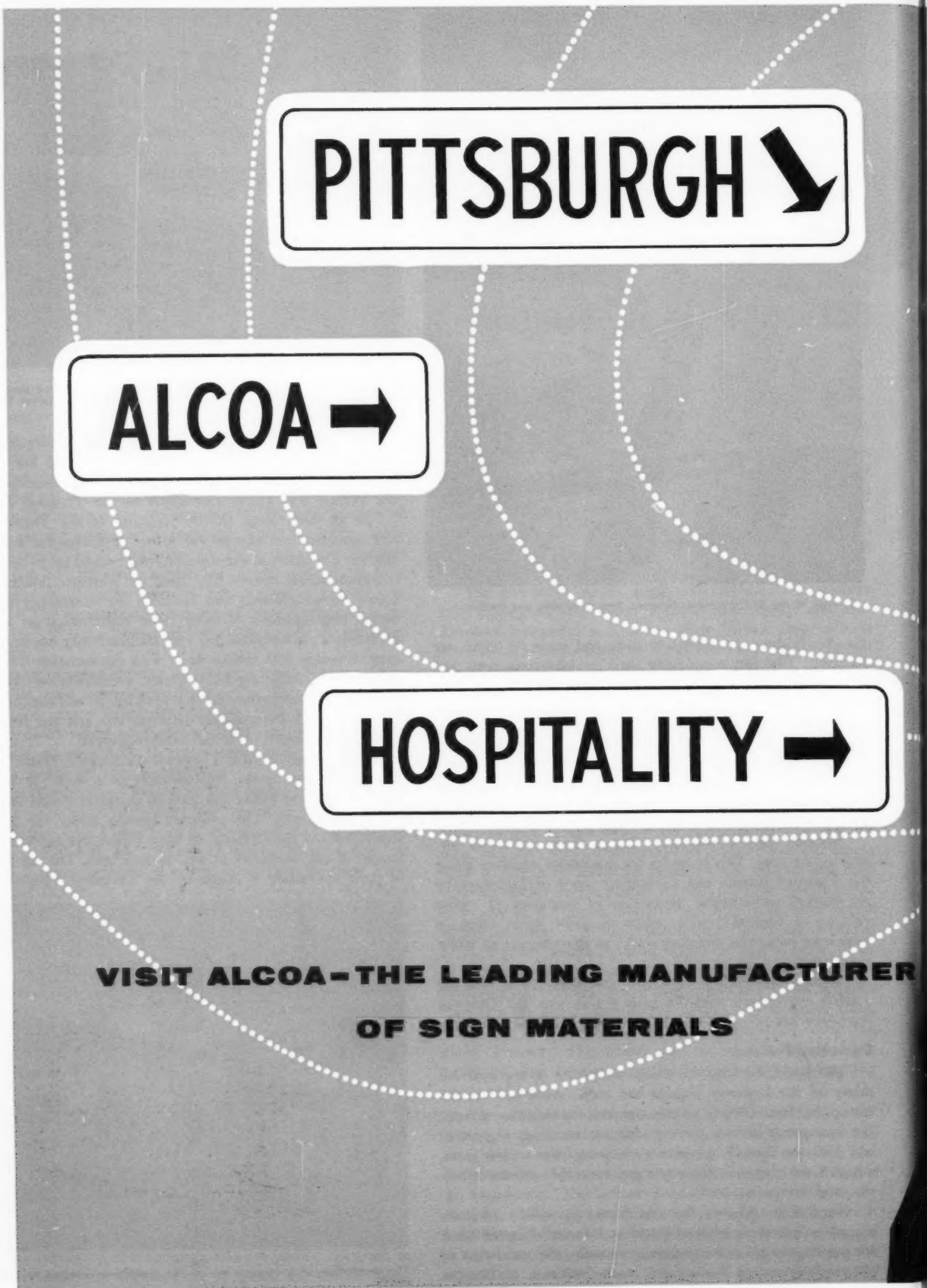
Fig. 5
Extremely high standards of engineering and moderate speed limits combine to make the New York State Thruway one of the safest highways in the world.

and the restriction of pedestrians, hitch-hikers, bicycles, animal-drawn vehicles and farm machinery. Where not superseded by a specific Authority regulation, the provisions of the Vehicle and Traffic Law apply on the Thruway system.

At an early stage in the planning of the Thruway, it was apparent that one of the prime requisites for safe and efficient operation of the superhighway would be an adequate communications system. The need for adequate policing, efficient snow removal, and facilities for emergency repairs makes instantaneous two-way radio communication a vital necessity. To accomplish this end, the Authority has equipped approximately 250 mobile units with combination transmitter-receivers, including snow plows, administrative cars, police cars and emergency service vehicles. In addition, all 196 toll booths, 13 maintenance headquarters and the four Division headquarters will be radio equipped.

Enforcement of the Thruway Authority's Traffic Rules and Regulations is the responsibility of a detail of regular New York State Police assigned to exclusive patrol duty on the superhighway. The troopers remain under the general supervision of the Division of State Police, but enforce regulations of the Authority as well as state laws. The entire cost of their operations is borne by the Thruway Authority.

Fig. 6
The prohibition of U-turns is one of the regulations adopted to promote safety.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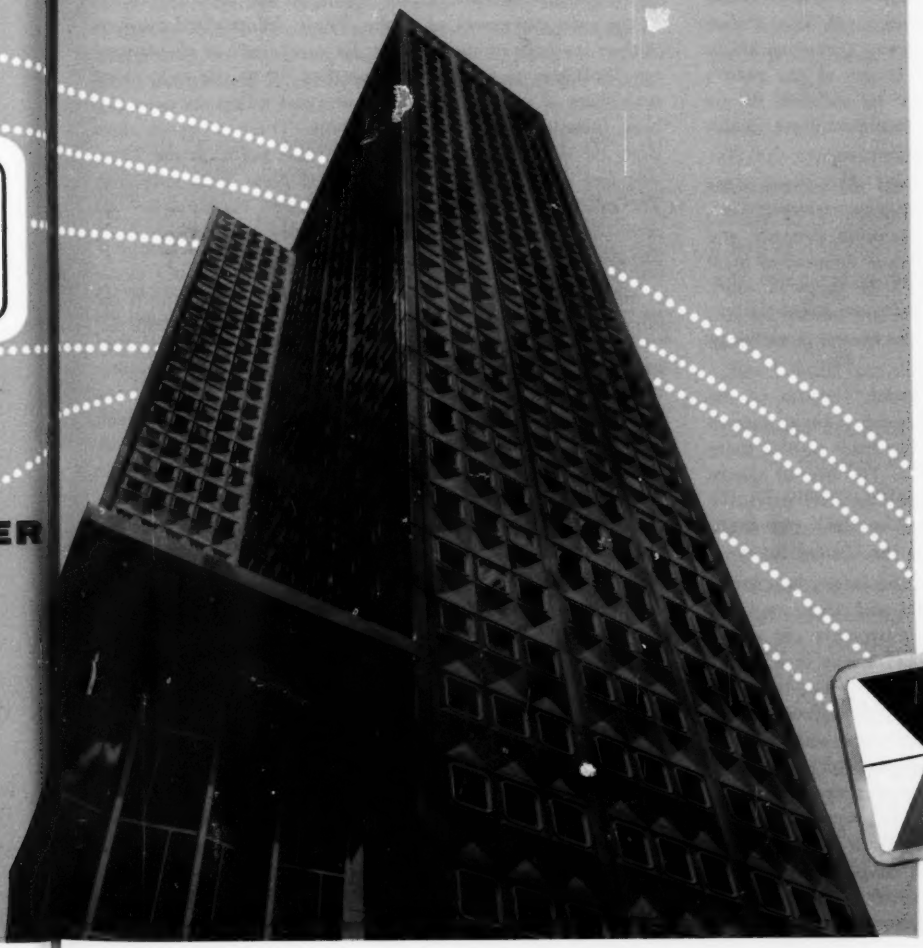

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Fig. 7
Interchange directional signs use both upper and lower case letters for place names.

Fig. 8
Mileposts are placed along the entire length of the New York State Thruway.

At the end of 1954, the Detail consisted of 86 men: two lieutenants, eight sergeants and 76 troopers, eight of whom were assigned to communications duties on the Thruway Authority's radio-telephone network. The Authority had purchased, equipped and assigned 42 patrol cars to the Detail. The Detail is in the process of being augmented by 20 additional troopers for patrol work, two troopers as communications dispatchers and 57 new automobiles. The new men and equipment were requested by the Division of State Police to relieve the heavy load on the Thruway communications network dispatcher and to reduce the length of the patrols from the present average of 24 miles. In addition to the Thruway two-way radio, each State Police patrol car is also equipped with the State Police two-way radio.

Carefully designed informational and directional signs are essential to safety on a modern turnpike or expressway. They must be visible at the greatest possible distance and clearly legible both day and night. Roadside delineators must outline the path of the highway beyond the range of headlight illumination, and trail blazer signs are needed to lead prospective users of the expressway to the nearest interchange by the most direct route.

One of the unique, and most popular, features of the New York State Thruway system has proved to be its various types of traffic signs, all designed after the most careful study to guide and inform the traveling public. The overall system of signs was devised by a special committee after extensive field study and surveys of the signs used by the other major expressways in the northeastern part of the United States.

One especially noticeable feature of the large interchange direction signs is the use of both upper and lower case letters for place names, rather than the customary use of all capital letters. Place names in upper and lower case letters are recognized sooner and more easily read by fast-traveling motorists than names using capital letters throughout. Similarly, the use of so-called negative copy, or white letters against a dark background makes for signs which are more legible under all weather and lighting conditions. The background material of all signs is a reflectorized royal blue sheeting, and the legends consist of reflectorized white letters. The large interchange direction signs range in size from four by eight feet to 9½ by 28 feet. Letter sizes vary from 10 inches in height for supplementary messages to 24-inch upper case and complimentary 18-inch lower case letters for the interchange names.

In addition to the interchange direction signs, approximately 12,700 smaller warning, regulatory, and direction signs have been erected on the Thruway and on intersecting state and local highways.

While not as striking as the large interchange direction signs, roadside delineators are equally, if not more important to the safe movement of traffic. These reflectorized markers outline the path of the roadway far in advance of the drivers' car headlights and have been installed 40 to the mile along both sides of the Thruway. Reflectorized mileposts have also been installed along the entire route. These milepost signs show the distance between the particular point on the Thruway and the Thruway terminus at the New York City line. The mileposts are used by the State Police, maintenance and operating personnel to pin-point locations or activities along the route.

Another operating feature contributing greatly to safety on the Thruway is the high degree of maintenance which the road receives. Because of the added features on a toll road such as interchange toll stations and service areas, maintenance consists of far more than mowing grass and plowing snow. On the 427-mile section of the superhighway between New York City and Buffalo the maintenance bureau is responsible for the maintenance of 427 miles of main line pavement, 53 interchanges and four toll barrier stations, thousands of acres in the mall and right-of-way areas, 507 bridge structures, 107 buildings, 66 standby emergency power plants and 25 sewage disposal plants.

Because of the limited-access feature of a toll road and the inability of an individual motorist to summon outside assistance, there are several other features which must be provided for the safety, comfort and convenience of the traveling public. These features consist of emergency repair services, service areas where the motorist can obtain food, fuel and rest, and the provision of ambulance service and fire protection in case of emergencies.

To provide emergency road service along the Thruway, the Authority has contracted with private garages in the vicinity of the various interchanges. Each garage contractor is required to maintain a modern garage open 24 hours a day for the repair of disabled vehicles, and to have three

radio-equipped trucks. One of these trucks must be on the Thruway at all times, operated by a qualified mechanic capable of making minor repairs at the roadside and patrolling the section of the road assigned to the particular contractor.

Because of the frequency of patrol by radio-equipped vehicles, including the State Police, garage patrols, toll collection supervisors, maintenance supervisors, and administrative personnel, it is usually only a short time before a disabled vehicle is discovered and reported to the radio dispatcher.

For the provision of food and fuel, and to provide safe areas for motorists to rest and relax, the Authority is constructing 27 service areas between New York City and Buffalo. All of the areas will have gasoline and diesel oil, as well as provisions for car washing and lubrication. Some of the areas will have complete restaurants with dining rooms seating 128 persons, counters seating 40, booths seating 24, and a snack bar for rapid stand-up service. Others will be lunchrooms having the same facilities except for the dining room, while still others will have only the snack bar. All buildings are designed to permit expansion of the smaller units to the complete restaurant as warranted. The eating facilities have been leased to three different operators on the basis of competitive bids. Similarly, nine different brands of gasoline will be available to Thruway motorists.

One of the early problems faced by the Authority planners was the need for fire-fighting service along the expressway. The problem was complicated by the fact that the Thruway is a limited-access expressway. Arrangements for fire protection along the route were made, however, by the State Division of Safety by extending the county fire mutual-aid plan.

This program appears to be the most feasible, since the Thruway passes through many fire districts which do not have an interchange leading to the expressway's pavement. Because of this fact, fire departments in many districts are not able to gain access to the Thruway within their own areas. On the other hand, departments that are located near an interchange can reach the scene of an emergency in an adjacent district much faster than the department responsible for fire protection in that district.

Under the county mutual-aid plan, the departments with access to the Thruway provide protection on the superhighway, while those without access take care of any emergency in the home districts of the assisting departments.

To provide ambulance service for injured and ill persons on the Thruway, the Authority has made arrangements with 37 ambulance services along the Thruway to handle emergencies on the superhighway 24 hours a day. Ambulances are summoned to the scene of an emergency by the State Police radio dispatchers, who receive calls for such aid from troopers or other Thruway personnel over the two-way radio network.

Existing Record

The record of operations during the year 1954 attests to the effectiveness of Thruway planning, construction and operation in creating an inherently safe highway. Unfortunately, a "safe" highway is only as safe as its users wish to make it.

During the 190 days of Thruway toll operations in 1954, motor vehicles traveled a total of 205,138,657 miles, equivalent to more than 400 round trips between the Earth and the Moon. In this period, three fatal accidents occurred, causing five deaths. Statistically speaking, this represents a fatality rate of 2.44 deaths per 100,000,000 vehicle-miles, and a fatal accident rate of 1.46 per 100,000,000 vehicle-miles. The rate may be compared to a mark of 6.1 deaths per 100,000,000 vehicle-miles recorded on New York State highways or to the national average of 7.0 during 1953, the last year for which figures are available. More than 96,000,000 miles had been traveled on the toll section before the first fatality occurred on October 17. The other two fatal mishaps occurred on November 1, causing four of the year's five deaths. By December 31, an additional 87,000,000 miles of travel had been accumulated without another fatal accident.

Two of the fatal accidents caused four of the deaths. In each of these a single vehicle was involved. While it is exceedingly difficult to assess the immediate cause of the accidents, evidence indicates that one of the three was caused by mechanical failure and the other two by driver error.

This record is significant when it is recognized that most Thruway users are still unaccustomed to high-speed turnpike driving. It is also significant that all three of the fatal accidents occurred shortly after midnight when traffic was relatively light and that none of the mishaps was related in any way to the physical characteristics or the design criteria of the superhighway.

In addition to the three fatal accidents there were 83 personal injury accidents, representing a rate of 40.46 per 100,000,000 vehicle-miles, compared with 305 per 100,000,000 vehicle-miles for all New York State streets and highways during 1953. There were 345 property damage accidents, or a rate of 168.2 per 100,000,000 vehicle-miles on the Thruway, compared to the state-wide rate of 587 per 100,000,000 vehicle-miles on other streets and highways. These statistics and the Thruway record for 1954 demonstrate vividly that safety is built into the highway.

Continued Research

The Thruway Authority is not content, however, to rest on its present record. During the past several years, the Authority has made an exhaustive study of all safety devices now in use, as well as those recently developed but not yet tried under actual driving conditions. This study included special pavement markings, roadside delineators and various mechanical, electrical, and electronic signals. In addition, the Authority is keeping abreast of new research and developments by cooperation with related agencies. The writer represents the Authority on the joint Inter-Turnpike Safety Committee, consisting of representatives of the four major toll roads in th northeast, and as a member of the safety committees of the American Bridge, Tunnel and Turnpike Association. Engineers of the Authority also serve on technical committee of the Institute of Traffic Engineers and the Highway Research Board.

Reference Notes

EASING THE HEADACHES OF MULTI-DIAL TRAFFIC SIGNAL OPERATION

By Allen T. Hayes (Assoc. Mem., ITE) City Traffic Engineer, Lansing, Michigan

One of the biggest headaches in multi-dial interconnected traffic signal operation occurs during the change from one dial to another dial. Without the use of interrupters to break up the usual long period while local controllers get in step with the master controller, motorists and pedestrians get impatient and begin to think the signal system is out of order. In many cities the use of interrupters and the relatively long time it takes to complete the change from one dial to another, causes heavy traffic to congest just before the peak during the change over, and the advantages of the longer cycle for the peak period are minimized. In Lansing we can handle peak periods by increasing the cycle length for 30-minute periods. Consequently, the faster the changeover from one dial to the other, without long getting-in-step delays, the better.

Mr. Floyd Rawlins, traffic signal maintenance man with the Board of Water & Electric Light Commissioners—city owned and operated utility, gave this change over problem much thought and came up with what we think is a feasible solution. His solution was to operate all dials in a multi-dial operation continuously. This not only provides for a more rapid change from dial to dial, but it also has the advantage of keeping the multi-dial system in step, when it returns to normal, with non-interconnected adjacent systems which do not change dials. To give you the technical details of the operation we will let Mr. Rawlins take over.

The changeover problem was solved by running all dials in a multi-dial MASTER controller without transferring the reset from one dial to another dial. In other words, this puts multi impulses on the rest wire at all times. This will allow each dial to interrupt for the other. This also does away with false resets.

For example: Running three dials in a controlled system using 50, 60 and 80 second cycles in dial 1, 2 and 3 respectively and transferring from dial 1 to dial 2 or 3, the local controller would not hesitate to transfer because the MASTER dial 1 would still be putting out dial 1 reset. After the transfer the reset would be interrupted causing the local controllers to dwell several short periods rather than one long period. This set up is also advantageous for triple reset operation.

One precaution is necessary and that is to avoid cycles in multiples like 40 and 80, 45 and 90, or 50 and 100, so that local controllers will not reset on the wrong impulse. In Lansing we use 50, 70 and 80 second cycles on one system and 70, 90 and 100 second cycles on another system.

This method of transferring has been instrumental in cutting a possible maximum dwell period of 70 to 100 seconds to a possible maximum dwell period of 50 seconds in the system using 70, 90 and 100 second cycles. Usually the dwell period is substantial under the new operation. Almost daily complaints to the Police Department about traffic signals being out of order—caused by excessive dwell periods—have been eliminated under the new operation.

REPORT ON RESULTS FROM RIGHT TURN ON RED LIGHT QUESTIONNAIRE SURVEY

By W. W. Rankin (Assoc. Mem., ITE) Traffic Engineer, City of Wichita, Wichita, Kansas

On March 25, 1955, questionnaires were sent out to Traffic Engineers and heads of Police Traffic Divisions in 20 cities throughout the country in the population group from 100,000 to 500,000. The purpose of the questionnaire was to determine past and present policies with reference to right turns on red traffic signal indications.

Replies were received from 18 cities or 90% of the total number contacted. A brief breakdown of the practices followed with reference to right turns on red lights in the cities covered by the survey is as follows:

1. Eleven cities permit a right turn on a red light only if a green arrow supplemental indication is shown.
2. Two cities permit a right turn on a red light if a sign authorizing the same is erected at the intersection.
3. Three cities permit a right turn on red light without a sign or a supplemental green arrow.
4. In two cities no right turns on red lights are permitted.

Of the eleven cities allowing the right turn on red light with the green arrow supplemental indication, six commented that the use was restricted to special locations such as "T" intersections, one-way street intersections, and in general at outlying intersections of low pedestrian volumes and ample lanes to allow for the merging movements. Of these eleven cities now permitting the right turn with a green arrow supplemental indication, two indicated that in the past the right turn on red light had been permitted with no control or only sign control.

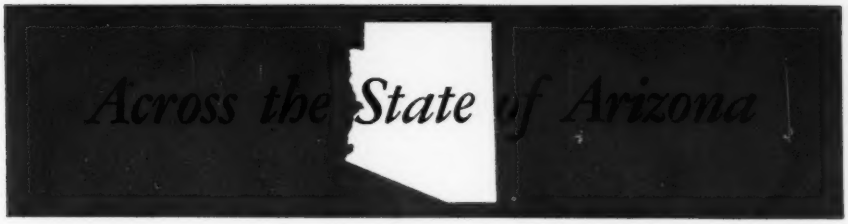
However, due to the accident hazard and lack of compliances with the model traffic ordinance this practice has been eliminated.

Each of the three cities allowing the right turn on red light without a sign were in states where this practice is permitted in the State Motor Vehicle Code. However, the Traffic Engineer of one of these cities indicated that even though the practice was allowed in his city he did not endorse its usage.

Both the cities where the right turn on red light is not permitted at the present time had allowed this turn in the past, but had eliminated it due to the accident hazard.

One of the two cities reporting the allowance of right turns on red light with a sign and no supplemental indication stated that this practice would be eliminated as new

(Continued on page 51)



"SCOTCHLITE" REFLECTIVE SHEETING guides traffic by COLOR

4-color reflective sign system gives safer, more efficient day and night traffic control

In Arizona, highway officials guide and protect motorists with a *color-coded* signing system drawn from the traffic spectrum. Night and day, each color communicates a specific action or message—alerts the motorist far in advance of the sign. Accidents are *prevented* before they start.

Because this system is reflectorized with Wide Angle Flat-Top "Scotchlite" Reflective Sheeting, it works at night when needed the most: in rain, snow or sleet . . . when signs are accidentally twisted or bent. Highway officials say these color-coded signs make traffic control more efficient, safer and enjoyable.

States like Arizona*, Washington, Michigan are communicating with motorists through the 4-color system. Investigate its many advantages for your area now. For FREE color-coded scale model sign faces of "Scotchlite" Reflective Sheeting write to: Minnesota Mining & Mfg. Co., Dept. GS-105, St. Paul 6, Minn.

*Arizona also uses other colors in their directional signing system.

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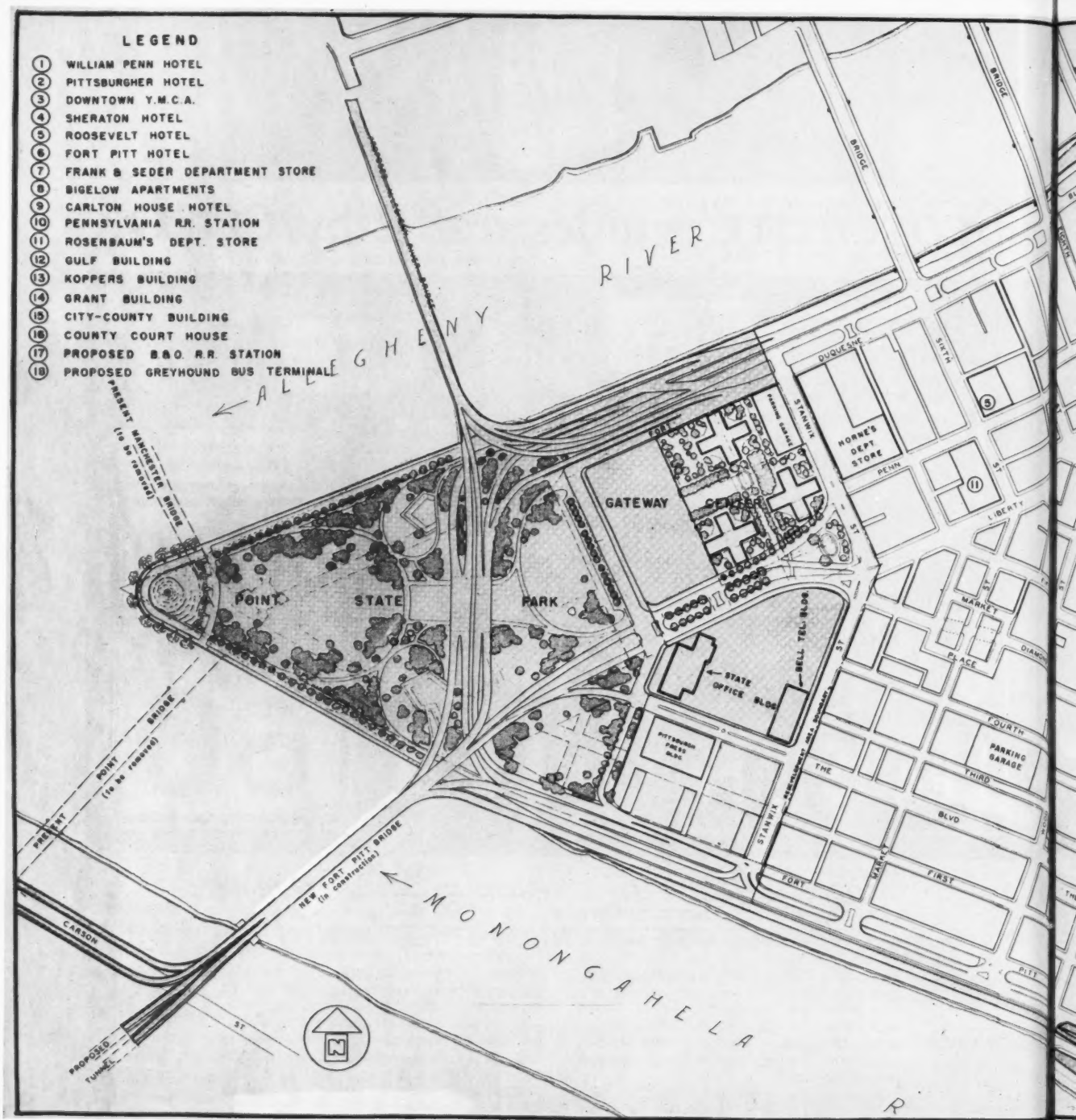
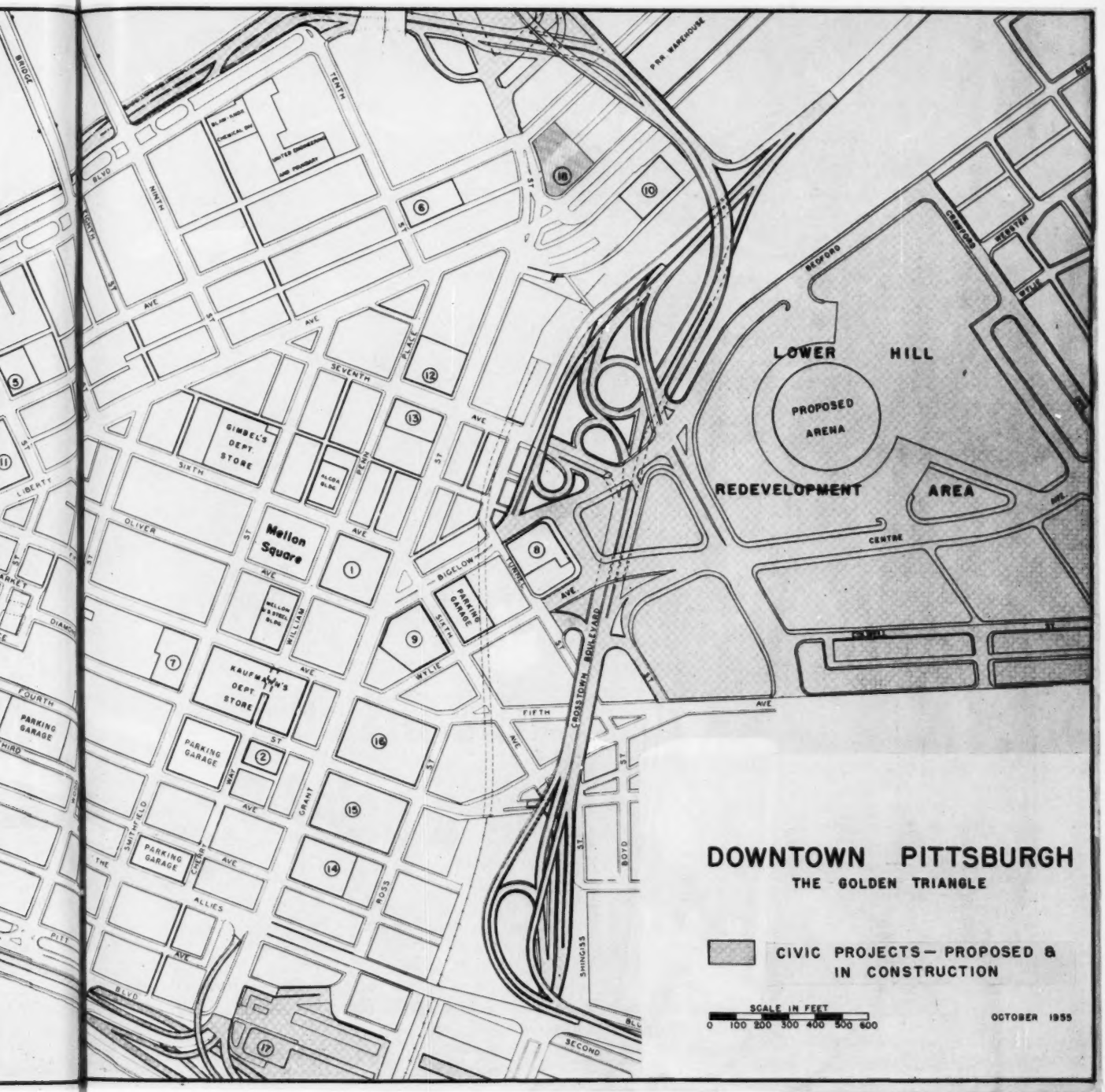


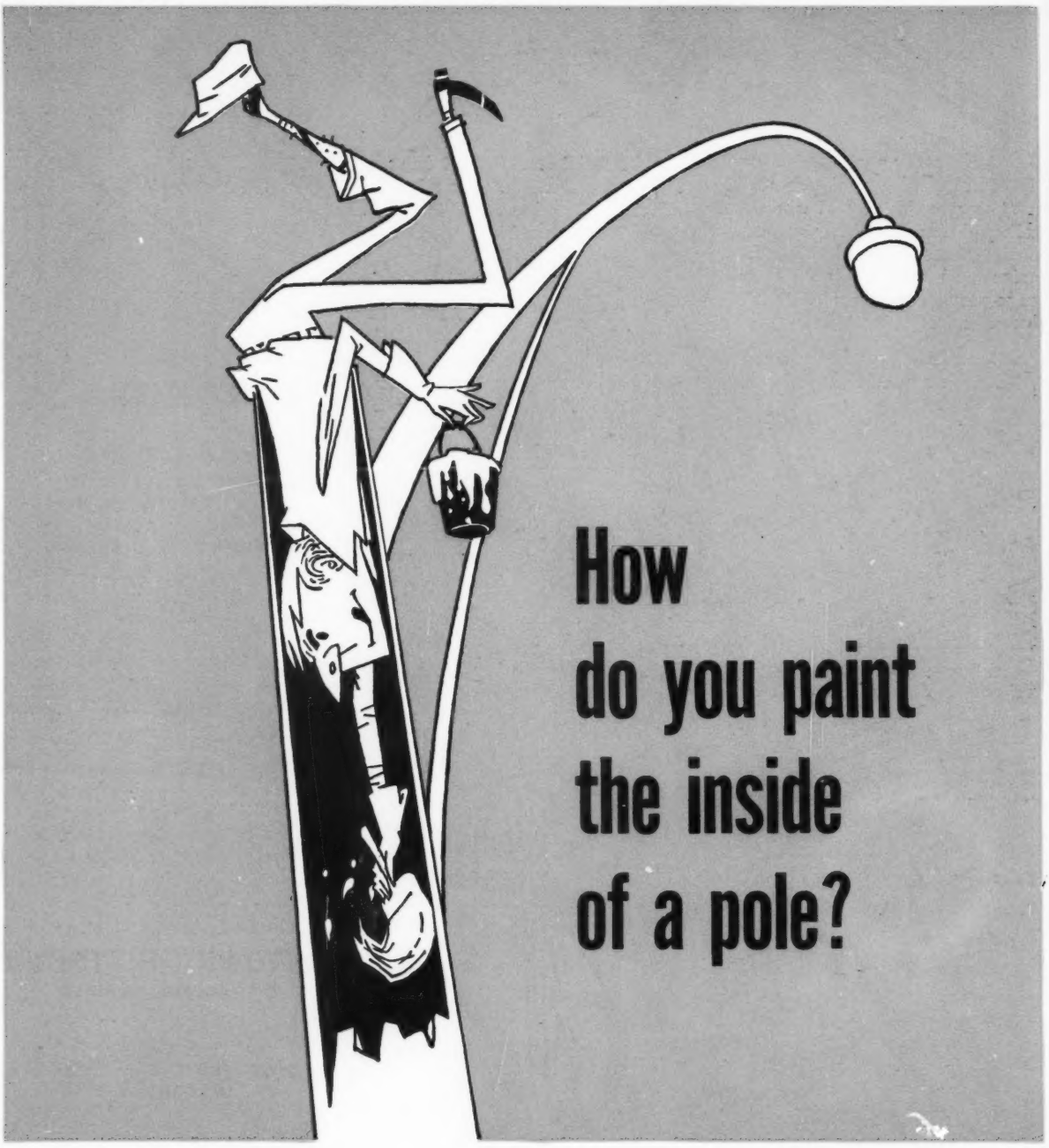
Founders 25th Birthday Meeting

Institute of Traffic Engineers



October 24-27, 1955

Pittsburgh, Pennsylvania



The answer is—you don't. Consequently, if the pole is made of corrosive metal, rust accumulates in the damp interior and weakens the wall, even though the exterior is regularly painted and maintains a deceptively fresh appearance. Rust scales pile up in the base, accelerate corrosion, endanger the insulation of the wiring, and greatly reduce the impact resistance of the pole.

Hapco Aluminum Alloy Poles don't deteriorate with age. They stand up through all kinds of weather, under the severest atmospheric conditions. They never require painting or other treatment to prolong their life. And their *installed* cost, due to their light weight and easy handling, is much less than that of ordinary metal or concrete poles.

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TRAFFIC NEWS

Mr. Joseph E. Havenner, Director of District No. 6, presented California's Governor Goodwin Knight the Institute of Traffic Engineers Award for "outstanding achievement in traffic engineering in 1954." The State of California tied for first place in the group of heavily populated and trafficked states. Standing around Governor Knight, from left to right: Joseph M. Kaplan, Manager, Greater Los Angeles Chapter of the National Safety Council; George Webb, Traffic Engineer, State of California; B. R. Caldwell, Commissioner, California Highway Patrol; William H. Parker, Chief of Police, Los Angeles Police Department; and Joseph E. Havenner.

Federal-Aid Apportionments Announced for 1957

The apportionment of $875 million in Federal-aid to the states for highways for the fiscal year 1957 has been announced by Secretary of Commerce Weeks. The apportionment of these funds for the second and final year under the 1954 Federal Aid Highway Act comes five months before the time limit set by Congress.

Under this apportionment, the primary systems receive $315 million; the secondary systems, $210 million; urban extensions, $175 million and the Interstate System, $175 million. These funds are now available for commitment to projects by the individual states.

The Department of Commerce stated that the apportionment for fiscal year 1956 resulted in a 20 percent acceleration in the Federal aid program in that year. An even greater increase is expected in the current year.

President Eisenhower To Support Safe Driving Campaign

Assurance of participation by President Eisenhower in a nationwide safe driving campaign, Nov. 20 to Dec. 1, was announced by the President's Committee for Traffic Safety.

The promise of White House support was given in a letter from President Eisenhower to Harlow H. Curtice, president of General Motors Corporation and Chairman of the President's Committee.

The safe driving campaign will culminate, as in 1954, in an "S-D Day," or "Safe Driving Day," on December 1.

In his letter to Mr. Curtice, the President said:

"It is gratifying to read in the report of the Committee for Traffic Safety that progress has been shown in making streets and highways safer for the American people. I am in accord with the determination of your Committee to broaden its work in stimulating effective community action throughout the country.

"The Special Message on Highways, which I sent to Congress on February 22, 1955, was motivated in large part by a recognition of the urgent need we have for improved highways as a factor in saving lives.

"In the hope that we shall be able to insure the safety of our families and fellow citizens, I shall be happy to participate in a safety campaign beginning on November 20, 1955, and culminating in S-D Day on December 1."

ASME Holds Diamond Jubilee

The American Society of Mechanical Engineers' Diamond Jubilee Annual Meeting will be held this year in Chicago at the Congress, Conrad Hilton and Sheraton-Blackstone Hotels from November 13-18, according to an announcement from Society headquarters. Special features commemorating ASME's 75th anniversary have been planned for the six-day event.

ASME conferees will hear and discuss more than 300 technical papers at 110 sessions covering a variety of subjects: aviation, applied mechanics, management, materials handling, oil and gas power, fuels, safety, hydraulics, metals engineering, heat transfer, process industries, production engineering, machine design, petroleum, nuclear engineering, railroad, power, textile, gas turbine power, wood industries, rubber and plastics and instruments and regulators.

Sidelighting the 75th anniversary celebration will be the "Exposition of Power and Mechanical Engineering" at the Chicago Coliseum from November 14-18. Under the auspices of ASME, the exposition will feature displays showing the newest developments in equipment power generation and distribution, automatic control, mechanical power transmission and utilization . . . maintenance as well as production equipment designed to lower operating costs and reduce maintenance. A new timely section on Atomic Power will also be featured.

Strictly Business

Flecton—The Pedestrians' Protection

A major development in pedestrian life-saving is reflective clothing that makes the wearer brightly visible to drivers at night.

The garments look like any other clothing day or night—except when seen from behind a car's headlights. Then they reflect bright silver, making the pedestrian visible to the motorist hundreds of feet away at night.

Source of the silver reflection is "Flecton" reflective yarn developed by

Minnesota Mining and Manufacturing Co., St. Paul. The yarn is incorporated in woven "Cat's Eye" fabric by William Skinner and Sons of New York, and in "Flecto-Flash" knitwear by Munsingwear, Inc., of Minneapolis.

3M officials believe the new yarn promises to become one of the most important developments in the history of pedestrian safety and an important factor in the entire textile industry within a few years. They point out that safety officials and the public have long known of the need for increased visibility of nighttime pedestrians, but that all previous efforts have failed to gain public acceptance because they changed the wearer's appearance unfavorably. By making garments more visible only when they have to be — when struck by a driver's headlights—these new clothes meet this problem, they say.

The National Safety Council has long urged pedestrians to wear or carry something white or reflective.

In 1954, according to Council figures, 7,900 pedestrians died in traffic accidents and 150,000 were injured. Darkness is the cause of the largest portion of these accidents and visibility is the key, traffic authorities say.

There are considerably fewer people on the streets after dark, yet more people are killed during the hours of dusk and darkness than during daylight, the National Safety Council points out. In wintertime, when it gets dark much earlier, more than one-third of the pedestrian deaths occur in just the three hours between 5 and 8 P.M.

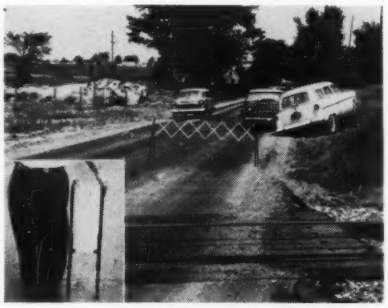
The problem is worse in cities than in rural areas because more people are on city streets during the hours of darkness. Half of the people who die in urban motor vehicle accidents are pedestrians, according to the National Safety Council, and in some cities as many as three of every four persons killed in traffic accidents are pedestrians, the Council adds.

Minnesota Mining and Manufacturing Co. in the 1930's developed its first reflective product, trademarked "Scotchlite." This reflective sheeting was used during World War II to mark military supply routes; to indicate boundaries of airport runways and taxi strips; and to reflectorize life raft paddles. The reflective qualities of the sheeting have now been increased so that objects covered with the "Scotchlite" reflective material are up to 230 times brighter than white paint at night. This is the material used today to make many traffic signs visible to drivers at night and for the taping of motor vehicle bumpers and bicycles.

Having contributed to safety of vehicle traffic, 3M was encouraged by safety officials to find a means of increasing nighttime visibility of pedestrians. The result is the new yarn. Comparisons of sample garments made up in both reflectorized and non-reflectorized versions show that observers can't tell which is reflectorized and which is not unless they are directly behind a source of light played on the garments as in the case of motorists.

Light Weight Portable Safety Barrier

Super simplicity and handling ease reach a new high in this easy-up portable folding gate ideal for use by police cruiser crews, highway patrols, sheriff department and highway construction groups. Ideal for use at the scene of an accident, around excavations, as a road block or barricade.



This safety barrier can extend to just the right length needed up to a full 8 feet. Complete self-contained, self-standing. Measuring only 8¾" x 36" when folded the unit weighs a little more than 15 pounds and can be easily carried on the back shelf or in the trunk of a car. With no parts to assemble, screw or fit together, it is always ready to give protection where you want it and when you want it.

The unit is built to really take it and is painted in yellow and black hard wearing lacquer. With it on the job there is no time wasted and no need to haul in heavy planing or barricade lumber. The unit can go up in less than 20 seconds, "though safety has no price —this safety barrier is priced to keep safety cheap."

For complete descriptive literature write to the Monarch Road Machinery Co., 1331 Michigan St. N. E., Grand Rapids, Michigan.

When You Change Your Address

. . . please notify us promptly. Your copies of "Traffic Engineering" will then reach your without delay and without interruption.—Traffic Engineering Magazine, Strathcona Hall, New Haven 11, Conn.

NOW YOU SEE IT - NOW YOU DON'T

By Gerald R. Cysewski (Assoc. Mem., ITE)
District Traffic Engineer, Washington Department of Highways, Seattle, Washington

The Problem

The problem of removing a traffic line needed to temporarily direct or divert traffic is one most aggravating to the traffic engineer. This is necessary in many instances where due to stage construction, detours, etc., traffic must be directed to one side or off of a project and later redirected.

We have tried a number of means to solve this problem. These included the placing of a very light line with conventional traffic paint, and removing that line with the proper solvent or paint remover. This has not been very successful since the remover did not entirely penetrate the paint film. Further, the solvent used has not been soluble in water nor did the material have an affiinity for water so that the residue could be flushed away. This has also been an especially costly proposition in view of the high price of the remover.

Utilizing painted paper strips of a light roofing felt have been tried. These have been secured in place with various adhesives including asphalt emulsion. This has not been successful since the material has not been abrasion resistant and was in some instances displaced through vehicle-braking action in hot weather. Further, upon removal, the adhesives still delineated that "temporary" line.

Attempts have been made to eliminate the line placed by using an abrasion-type machine which scoured the surface. In addition to being rather costly this treatment resulted in a slight dishing and smoothing of the surface. This is particularly objectionable where a pebbly-grain asphalt surface exists. The smoothing and dishing left discernible line which appeared quite objectionable in wet weather when clear delineation of the corrected line was most necessary.

Another means is to obliterate the "temporary" line by painting over it with a lacquer approximating the color of the asphalt or concrete surface. This did a fair job. However, when the covering paint of the pavement color started to wear, the diversionary line reappeared. This has been the source of considerable criticism.

The Solution

We have had recent experience with a new product, which has just been placed upon the market, a paint that can be placed upon the surface of the highway with the normal equipment, and which may be nearly 100% removed at little expense. This paint does not have, from our observations, the wearing ability of the normal traffic line lacquer but, its life does approximate from ⅓ to ½ that lifetime under similar operating conditions. The drying properties approach that of lacquer and are only slightly longer. Under normal application the line will bear traffic with no tracking or other deleterious effect in less than 30 minutes. We have actually allowed traffic to pass over these test lines within fifteen minutes after application on a warm summer day.

To the layman this paint may be likened to the emulsion type housepaint in that upon curing and drying it becomes washable and in fact scrubbable.

THIS PAINT IS NOT INTENDED FOR PERMANENT TYPE INSTALLATION. IT IS A SPECIAL PRODUCT FOR A SPECIAL APPLICATION. IT HAS ONE POINT OF GREAT VALUE TO THE TRAFFIC ENGINEER—REMOVABILITY.

The remover of this paint is not a highly caustic or acid product, nor does it contain corrosive salts of any nature. It may be likened to a heavy duty household detergent. The remover may be applied using the same equipment that is used for the application of the paint, the spray gun or the brush, or it can be poured directly on the line to be removed. The product includes wetting agents and emulsifying compounds to reemulsify the pigment.

After considerable difficulty in delineating temporary traffic control and more difficulty in removing that temporary control, this product appears to be the answer to this problem.

This really is a "Now You See It—Now You Don't."

TEMPO
"The Removable Traffic Line Paint"
FOR TEMPORARILY REROUTING TRAFFIC
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FOR ALL TEMPORARY HIGHWAY MARKINGS
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Sustaining Organization Representative

The Marbelite Company, Inc.
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Attention Mr. William E. Lenz
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Minnesota Mining & Manufacturing Company
900 Fauquier Avenue — St. Paul 6, Minnesota
Attention Mr. Donald O. Opstad
Sustaining Organization Representative

Miro-Flex Company, Inc.
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(Continued on page 41)

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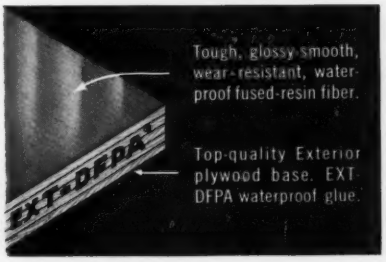
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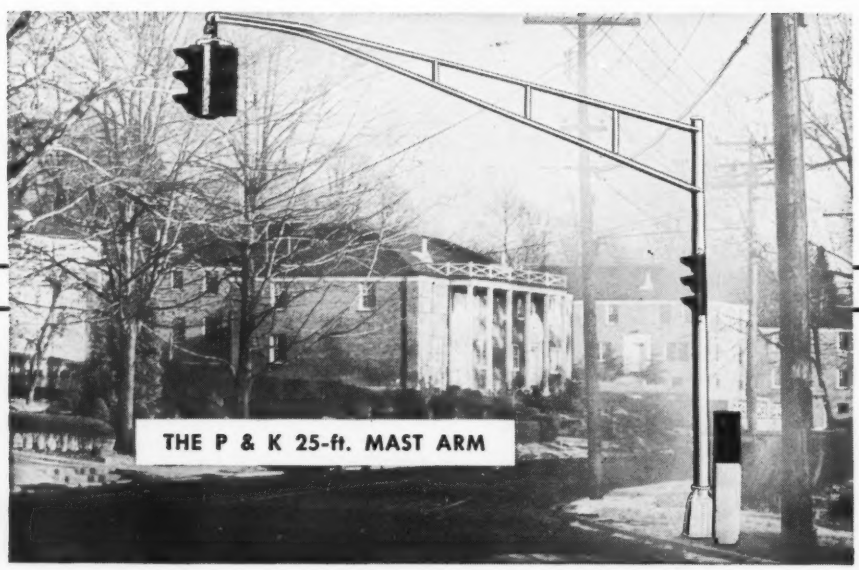
THE P & K 25-ft. MAST ARM

LEADING SPECIALISTS IN ALL-ALUMINUM TUBE DESIGN AND FABRICATION

SECTION NEWS

CANADIAN SECTION

Excerpts from the June issue of the Canadian Newsletter, **Walter Macnee**, Editor.

Toronto Meeting

In Toronto, we are fortunate to have a large enough group to hold meetings. It is our hope that these will become more regular and if a specific time can be arranged each month (or even every two months), we will let you know so that if you are planning to come to Toronto, you can try to arrange your trip to be here when meetings are being held. Since the last newsletter, we have had three such meetings, and we will attempt to give you a brief rundown on the highlights of them.

On March 15th, 26 members and interested persons met at the Royal York Hotel where the room and refreshments were generously supplied by **Ed "Trafficounter" Horton. Philippe Ewart**, our vice-president, was in town and gave us the details about the National Highway Safety Conference and the Ted Matson Memorial Fund. **Bob Campbell** described his trip to Phoenix, Arizona, in connection with the National Committee on Urban Transportation and a discussion on the signing of dead end streets and school crossings was held. Perhaps the following items prepared by **Irv. Weinberg** can better describe the rest of the meeting.

Poem — by I. Weinberg

We started at 8:30
With everyone there,
Some guys with white shirts,
Some guys without hair.
We sat and we smoked
Like boys on a spree—
(Why shouldn't we, then,
The fags were all free).
Walter in the chair,
The agenda before him,
He presided so well,
We couldn't ignore him.
Even Art Lomax said
It was worth the long "Treep".
To hear the message
From the "Ewart" called "Philippe".
Bob Campbell told us all
About his trip to Phoenix,
But he talked about "Shop",
Instead of gals in V-necks.
When the business was over,
You know how men are,
The translation for "adjourned",
Is . . . "Head for the bar!"
There was everything there,
And I ain't just snortin'
When I say "We had fun",
So — thanks, Ed Horton.

Our other two meetings were held on May 13th and June 1st at the Metropolitan Toronto Planning Board offices. At the May meeting, we were fortunate to have our President, **Harry Burns**, in attendance. Harry was in town for the E.I.C. convention and informed us that the E.I.C. would welcome articles of a Traffic Engineering nature for publication in their journal. We were also fortunate to have **Norman D. Wilson** (Toronto) and **J. R. Ong** (Cincinnati) sit in at the meeting and both of these noted consultants had a few words to say. Much of the discussion was about the National Highway Safety Conference and it was decided to offer all assistance possible to the conference. At our June meeting, we heard reports from those members who had attended the conference and it was decided that the Canadian Section should offer to undertake the work involved in some of the recommendations of the Engineering Committee of the Conference with particular attention to the creating of a Canadian Manual of Uniform Traffic Control Devices. We will have more details on this after a further meeting with the Conference Executive Committee this month and we will forward them for your consideration.

Montreal

Phil Ewart has been quite active working on the redesign of some bridges which are being affected by the St. Lawrence Seaway. He has also been doing some speaking on the effects of the seaway on traffic facilities.

Winnipeg

Ralph Borrowman reports that an Origin and Destination Survey was conducted in the northeast section of Greater Winnipeg, but no results are ready as yet.

Toronto

John "Parking Lot" Walker has just become a landowner since moving into his new house in Etobicoke. We bet he has a good "garage" with it.

The First Canadian Traffic Training Course

During the period May 9 to May 13 of this year, a Traffic Training Course was held at the University of Western Ontario in London, Ontario, under the sponsorship of the Ontario Traffic Conference. This course, the first of its kind in Canada, was designed to provide training for engineers, enforcement officers and interested officials, all of whom are involved in the many problems relating to traffic.

Because of the very profound interest shown by various municipalities, it became quite evident at the outset that this first course would have to be quite

(Continued from page 39)

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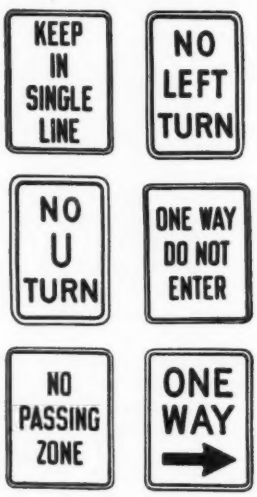

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general in nature. It was also evident that representation would consist largely of the enforcement officer type. Consequently, it was decided to direct a major portion of subject material toward the enforcement field. However, consideration of the list of lecture topics appended will show very clearly that engineering was not overlooked, and also that the I.T.E. was well represented on the lecture staff.

The final enrollment in the course totalled 38 and consisted of 28 enforcement officers, 6 associated with traffic engineering, city engineering or traffic coordinators offices, 2 registered engineers and 2 aldermen. It was interesting to note that 37 of the enrollees were from Ontario municipalities while one man came from Frederiction, N. B.

Lectures began formally each morning at 9:00 A.M. and continued until 4:50 P.M. with a one-hour break for lunch. Generally, demonstrations of equipment and lectures were held for approximately two hours in the evenings. Each lecture period was of fifty minutes duration, with a ten minute break at the end of each lecture. Obviously there was very little time for extra-curricular activity, however, in spite of this, we had practically full attendance at each lecture.

At the conclusion of the course, each man was asked to answer a series of questions relating to the course. By and large, the comments were very favorable and, in spite of the strenuous program, a very definite desire to have additional training in subsequent years was indicated. Although the majority felt that a greater emphasis should be given enforcement, it was gratifying to find that several of the police officers were pleased with the engineering information provided, and apparently realized that the coordination of engineering and enforcement is imperative to a good traffic program.

In concluding this brief report, I think it important to compliment the lecturers upon the outstanding contribution they made to the success of this course. We were extremely fortunate in our selection of speakers and the I.T.E. can be justly proud of its representation on the lecturing staff.

In the event of future courses, it would seem reasonable to suggest that some lectures of a more technical nature be given to engineers. In this way, it may be possible to attract more engineers to the course. However, it is the writer's opinion that this kind of training must bring the engineering and enforcement people together on common ground, so that each can be informed of the others difficulties, to the end that the necessary cooperation of the two groups will become a reality.

MISSOURI VALLEY SECTION

Taken from the July issue of the Missouri Valley Monthly Paper, **George C. Lichty**, Editor.

Changes in Kansas Traffic Services Department

R. R. Ireland, Member, Institute of Traffic Engineers and Member, Missouri Valley Section, is being replaced as Engineer of Traffic Services for the State Highway Commission of Kansas by **Claude McCamment**, who at one time was Safety Engineer for the Kansas Department. **Ireland** has advised us that he expects to be transferred to another department, but at this time no additional information has been received in regard to his new position. The Section extends best wishes for success on his new job to **Claude McCamment.**

Words of Wisdom to the A.S.C.E.

Leon Corder, the Section's Corresponding Secretary, had an opportunity on June 16 to carry traffic words of wisdom to the membership of a sister engineering society, the American Society of Civil Engineers. Corder spoke on a Missouri Highway Department 5-year Traffic Accident Analysis which has just been completed in that state.

WESTERN SECTION

Snipped from the July-August issue of the WesternITE Newsletter, **Mel West**, Editor.

Inter-Mountain Area

Moving operations for the scattered office forces of the Colorado Department of Highways will begin the last week-end in July when **Al Pepper's** Traffic Operations Section and the parent Planning & Research Division transplant personnel and equipment and become the first tenants of the new State Highway Building located at the southeast edge of Denver. By early September, the entire department personnel of the Denver area will be housed under one roof.

Art McLaughlin, formerly Traffic Engineer for the City of Aurora east of Denver, has joined **Al Pepper's** staff and will work in the Section's Signal Shop and assume duties in connection with the state-wide installation of traffic signals.

Jack Bruce reports that "Operation Big Switch" in Denver's downtown traffic control plan has turned out to be quite successful and well received by the metropolitan driving public. Following the San Diego meeting of Western Section I.T.E., Jack escorted Al on a personal inspection tour of the business area and demonstrated how a motorist can now traverse the entire length of one of the city's oldest thoroughfares at a speed up to 35 mph at certain times under the present progressive signal system.

Ellis Mathes and **Lew Ross** report that the Idaho Department of Highways has been given the green light for the installation of "YIELD RIGHT OF WAY" signs on the state highway system. An opinion received from the Attorney General's office declares that the state is legally protected in the use of the triangular Yield signs.

San Diego Area

Marty Bouman (Davy Crockett at the WITE Convention breakfast) reports that his wife, Jean, presented a son, Ward Randell Bouman. **Hal (Bull) Durham** (popcorn salesman) reports a new son, Alan Michael Durham. Congratulations!

Jack Henberger is off to New York August 20th on another junket after he and Helen spent two full weeks in the wonderful Pacific Northwest.

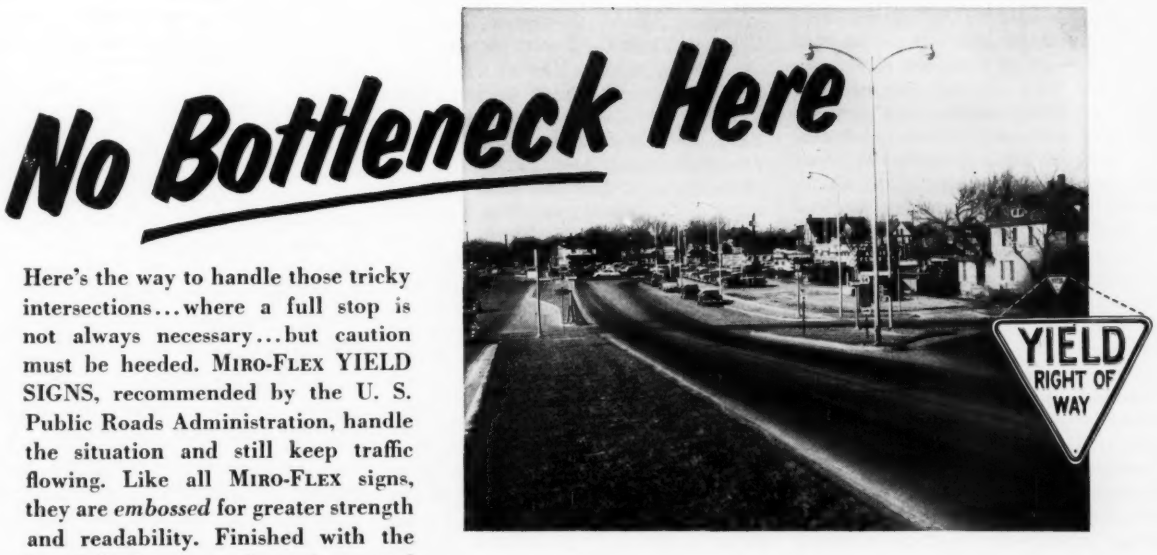
Historical Highlights of WITE

By Bob Dunn

The Western Section of the Institute of Traffic Engineers is rapidly becoming a prominent and powerful institution. It has more than twice as many members as any of the other ten Sections in the nation. As a matter of personal interest upon the part of your Editor, and for the posterity of the original and present members, the following historical research from the files of WesternITE is presented on the organization and activities of our professional group of 158 Traffic Engineers.

In 1945 and 1946,considerable thought was given as to the advisability of establishing a Western Section of the Institute of Traffic Engineers. Even though the records do not clearly state, much of the preliminary "foot-work" contact was probably done by our "Ambling Amiable Ambassador" **DeYoung.** The climax of the historical first organizational meeting was attained in the hotel room of **Arch Bollong** during the meeting of the Western Institute for Traffic Training in Corvallis, Oregon, in May or June of 1946. The eight men who took pen in hand to sign the original petition for our independence included: **Bollong, Dorsey, DeYoung, Fowler, Carter, Havenner** and **Crandall.**

Arch Bollong prepared the Constitution and By-Laws which were approved at the Fall meeitng of the Board of Di-



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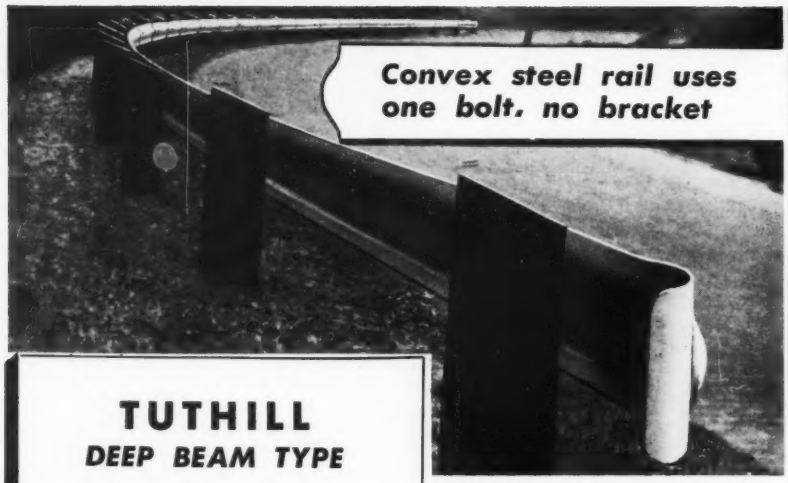

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rection of the Institute in Washington, D. C., on December 4, 1946. An election committee headed by **DeYoung** named a slate of officers which was submitted to the original 31 members of the section, and they elected **Nick Carter**, President; **Win Carsten**, Vice-President; and **Joe Havenner**, Secretary - Treasurer. Other original members not previously mentioned included: **Bate, Clark, Czizek, Dunn, Faustman, Forbes, Gallagher (C. R.), Gibson, Hartung, Head, Howie, Luckenbach, Pepper, Reading, Shoaf, Smoot, Stancer, Taylor, Webb, Weller, Weymouth, Wilson**, and last but not least, the distinguished **Woolverton.**

The First Annual Meeting of the Western Section was held in San Francisco in June 1947. **Arch Bollong** presided and installed the first officers. **Havenner** published the first issue of this "torrid tabloid" in February of 1948, and during the first year, reported on such history-shaping events as: **Dorsey** and **Crandall** serving on the National Board, **Faustman** becoming Traffic Engineer of **Sacramento**, the first Northwest Traffic Engineering Conference that was held in Corvallis in July of '48, and **Dick Wilson** breaking his leg while skiing.

Hotel Whitcomb in San Francisco was the site of the Second Annual Meeting on September 26-27, 1948. **Bollong, Czizek** and **Havenner** were the second group of officers. **Havenner** continued to record historical first events such as: the first Bay Area Meeting on February 1, 1949, the first Oregon Area Meeting on February 6th, the first So. Calif. Area Meeting on April 28th, the first Washington Area Meeting on May 21st, the first Colorado Traffic Engineering Conference on June 9th, and the first Western Section desertion—**Howie** sneaks off to Cincinnati.

By June 24, 1949, the Western Section had grown to 75 members and held their Third Annual Meeting at Hotel Multnomah in Portland, with 19 members in attendance. **Reading, Fowler** and **Head** picked up the "gavel," "pen" and "change" and served for the following year. This was the year that **Evans** "ran out" to the U. S. C. of C. in D. C., **Fowler** gave the first of his 100 talks on the Portland one-way grid, **Glenn** went to I.T.T.E. and **Bob Holmes** "viewed with alarm" the "tail" that was beginning to "wag the dog," and urged quality, not quantity, in Western Section membership.

Twenty-four WITES gathered at the Hollywood Roosevelt Hotel in L. A. on August 3, 1950, for the Fourth Annual Meeting. **Fowler, Havenner** and **Head** very capably organized the efforts of the 93 members in preparation for the 1951 22nd National Convention, the first to be held in the West. Other highlights of the year included **Robinson's** winning of the Past President's Award, **Head** having the chickenpox, and a certain "Air" to section activities being added by Itejoe WesternITE (Pat's Pet).

Beginning on September 24, 1951, the Fifth Annual Meeting was held in conjunction with the National Convention at the Ambassador Hotel in Los Angeles. Fifty-nine section members were present at the local business meeting to cheer **Havenner, Higgins** and **Berry** on as the new officers for the coming year. The gala events included: **Berry, Glenn** and **Kennedy** sponsoring T. E. Short courses, **Bollong** honored by the Seattle Safety Council as the nation's first city traffic engineer, **Lloyd Braff** bringing 50 Texans to L. A. to see Freeways bigger than those they have in Texas, and **"Ace" DeYoung** rising to superlative heights in WITE tennis tournament play.

The site of the Sixth Annual affair was at the University of California on June 27th and 28th of 1952. Forty-five of the 123 WITE's were in attendance. **Higgins, Berry** and **Carsten** accepted the leadership of the section and achieved the following results: **Crandall** became the National Prexy, **Lewarch** opened Seattle's 7 million dollar two-level viaduct and had 50,000 customers the first day, **Ed Hall** became the second section member to win the Past President's Award, **Hank Barnes** became a National figure, and **Margaret Woolverton** went south of the border.

The Seventh Convention held forth at the Mayflower Hotel in Seattle concurrently with the 6th N.W.T.E. Conference. The section membership numbered 125 as **Berry, Head** and **Carsten** assumed office. This was the year that **Carsten** hedge-hopped from Olympia to Houston to Dallas and was succeeded by **Robinson, Havenner** became District Director, the Section suffered a severe loss in the passing of **Nick Carter, Higgins** flew home from the Buffalo Convention via A.G.A. Airlines, and **Hutchison** moved to a new office building having blonde elevator operators.

The Seventh N.W.T.E. Conference at Oregon State College beginning on May 12, 1954, was also the time and place of the 8th Annual Meeting. Forty-three WITE's welcomed **Head, Hutchison** and **Robinson** as the Section officers. During their term: **Still** and **Crandall** vied and tied for the western states' 1953 T. E. award, **Robinson** went ASF and was replaced by **Dunn**, WITE made a successful bid for the 1956 ITE meeting in S. F., and **Pepper** burst forth as the "Star" WITE reporter.

HENRY HITS A RECORD LOW IN BLUES!

By Bryan Wilson (Mem., ITE)
Traffic Engineer, Wisconsin Division AAA, Madison, Wisconsin

Henry Glausson, Traffic Engineer of Mule's Head, Pop. 73,000, sat dejectedly at his desk toying with his slide rule. The varied raucous noises common to a thriving city were borne to his ears on a desultory breeze, adding to his gloom. Lordy, Lordy, but it was hot! Even the house flies that some careless visitor had let into the office seemed fagged out. When they could be induced to fly, their flight resembled a sine curve, so lazy was the beat of their wings. Henry's mind sought frantically to escape this sordid present. He thought wistfully of a little farm in some secluded nook many, many miles from any city. In his mind's eye he could see a small, but select, herd of Holsteins, their udders sagging with milk, grazing contentedly in the deep grass beside a cool, placid brook alive with trout. He could almost hear the vainglorious crow of a lusty Rhode Island Red rooster proclaiming another victory for Venus. Idly, his imagination pictured the conquest: the rooster scratching industriously, pretending to find a worm for a nearby interested hen, which, in turn, pretended to be fooled and thus came too near. Were people like hens? wondered Henry.

He could see a charming stone cottage with interesting little gables and a huge, ivy-covered chimney nestled cunningly among shady Maple and Birch trees. The intriguing odor of a baking apple pie, sprinkled liberally with aromatic cinnamon and nutmeg, teased his nostrils and set his mouth to watering. He could see Alice, formerly his winsome secretary, but now his wife, moving daintily about the large oven, cooking him a supper of Virginia ham, sweet potatoes, wild greens, American fried potatoes, thickened gravy and corn bread.

There was, strangely enough, no garage on this farm. In fact, there was no motor vehicle within miles! Gad! what an idyllic life—no vehicles, no Councilmen, no Taxpayers!

A heavy slap on the back brought Henry back to reality. He heard the disgustingly hearty voice of the Planning Engineer—a voice so robust and energetic the very sound of it nauseated him. "Heh! Hey! Tiger Puss, what yuh day dreamin' about? Secretary on her vacation? A heck of a way to dissipate the taxpayers' money sleepin' on a fine, warm day like this that was made especially to wrap up a lot of work in."

"Go 'way!" ordered Henry. "Go 'way and leave me to the heat and my miseries. Why I ever let myself abandon good, honest construction work to take up this thankless task of trying to move persons and goods safely, economically and efficiently I'll never know. I've grown to despise automobiles, commercial vehicles, buses, motorcycles, bikes and scooters. But, most of all, I cherish a deep and abiding hatred for the damned letter-writing rabble that signs itself 'A Taxpayer', after wordily demanding a sign, signal or marking that is either obsolete, illegal or immoral! Why didn't I have brains enough to take up farming, sheep herding, prospecting, or something else easy and tranquil? Why? I'll tell you! Because, hiding under my thin veneer of technical patter; lurking beneath my shallow, polite smile; slumping behind the bright, intelligent expression I so laboriously assume for the dear Public, is a stupid fool! An unbelievable ass! An—"

"Hey, you have got it bad!" exclaimed the P.E., his good-natured face wearing a puzzled expression. "I'm surprised, Henry, that a smart young engineer like you could have such black thoughts on a fine day like this. I know I kid you a lot, but actually, I've envied your tact in handling tough customers, your technical skill and, yes, dammit, your brains! You got everything, while I'm just a dumb idiot masquerading as a planning engineer who knows all the answers. I'm just a pore unenlightened dunce wearing a job that's so much too big for me that it keeps slipping down over my fat hips. Actually, I ain't got sense enough to pour rainwater out of a boot with directions printed in Scotchlite on the heel! I'm not even a good Christian, so when I die it won't be to relax—I got to go to hell, yet! What a future! Why, Henry, you've made me see how futile everything is. I'm bad off! I'm worse than—."

The P.E. broke off his tirade and glanced sheepishly up at the Mayor, who had entered the office briskly, his step confident, his face pleasantly wreathed in friendliness. "Why all the gloom, boys?" he asked smilingly.

Henry and the P.E. looked at each other, their faces long and solemn. "Why, Boss," answered the P.E., "I guess we just got the blues." His face puckered like that of a drunk with a crying jag.

"Yes, sir," confirmed Henry. "I guess we've got the meanest and low-downedest blues that ever was. Our blues make the kind they sing about in Saint Louie and Memphis plumb cheerful by comparison. I'm really gone! I just don't seem to give a dam'. Why, you could fire me this minute and my only reaction would be hysterical laughter."

"That's funny," mused the P.E., "I feel the same way. In fact, for two bits I wouldn't wait for you to fire me. I'd quit and get a job such as I'm fitted for, like tie-hacking, or some honest work far removed from people, places and things." He stared defiantly at the Mayor, whose face had lost its look of cheer, of assurance, and begun to form into doleful contours of discouragement and self pity.

"Boys, I want to join you in singing the blues," stated the Mayor. "For years I've struggled to be cheerful and progressive in both action, thought and appearance. It's been tough to conceal my unworthiness for this or any other job from the sharp eyes of the public. But now, Thank Goodness, I can let my hair down! Fire you two brainy boys? Don't make me laugh! Why, you all have everything. If you had nothing but your youth, you'd still have everything. But look at me! That is if it doesn't make you sick. You're now looking at the world's greatest phoney! At a man who has spent half a century trying to impress people with the fake idea that he's a man in shining armor —a top-flight statesman, a great administrator. Ha! If I had my just desserts I'd be an indifferent street cleaner. I've aimed high, but what is my reward? A small job in a medium-sized town! I don't even own my own home, yet the papers accuse me of making thousands of dollars in graft every time a contract is let for building a street or a school. Behold me, boys! False, windy and incompetent! I'm not even the big bag of wind my political opponents have more than once hinted. I'm just a cubic centimeter or less of hot air done up in a mighty small poke. Gad! What a bust I've been!" The Mayor sighed tiredly and dropped into a chair.

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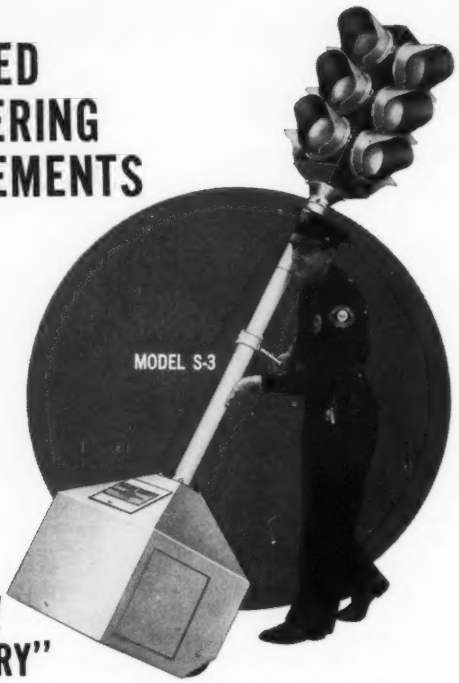

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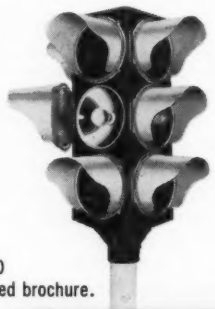

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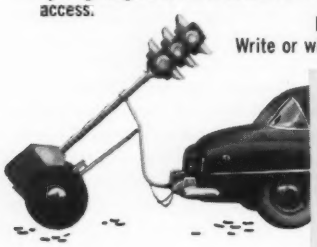

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Henry and the P.E., who had been listening in wide-eyed astonishment, sat astounded and aghast. His was one Mayor whom they liked and respected. They resented anyone, even the Mayor himself, talking in that fashion about a man who was heads above any politician they had ever known.

"Boss, these damned blues of mine and Henry's sure are catching," said the P.E. "If anybody else had made those remarks about you I'd see that he swallowed them."

"Dam' right!" agreed Henry, belligerently, "I feel the same way and I want to tell you that nobody can run down the best dam' Mayor I ever worked under, not even yourself! Why, you've won everything worthwhile from life—the love and respect of all the honest people not only of this town, but of the state. You shouldn't permit yourself to get in these bad moods, sir."

"He's 100% right, Boss," said the P.E., earnestly. "People should be cheerful and thankful for their blessings. People got to have more backbone! Why, I feel plumb good now and chuck full of energy. I bet I can really go to town on that new sub-division we're developing."

"I feel fine, too," said Henry, grinning. "You know, I feel like I can breeze through that foot-high stack of complaints on my desk in nothin' flat!"

The Mayor's face had again assumed its habitual expression of alertness, confidence, pleasantness and dignity. "Boys," he said, "I'm proud to know I have a few friends with whom I can let down my hair and get things off my chest harmlessly. I feel a lot better, too, and I also believe that it's a good thing to blow off steam when the boiler is about ready to bust. Good, also, to deflate our ego occasionally with pictures so black that we start laughing at them, knowing we can't be quite that bad. We have health and we have plenty of work to do. What greater blessings can a man expect?"

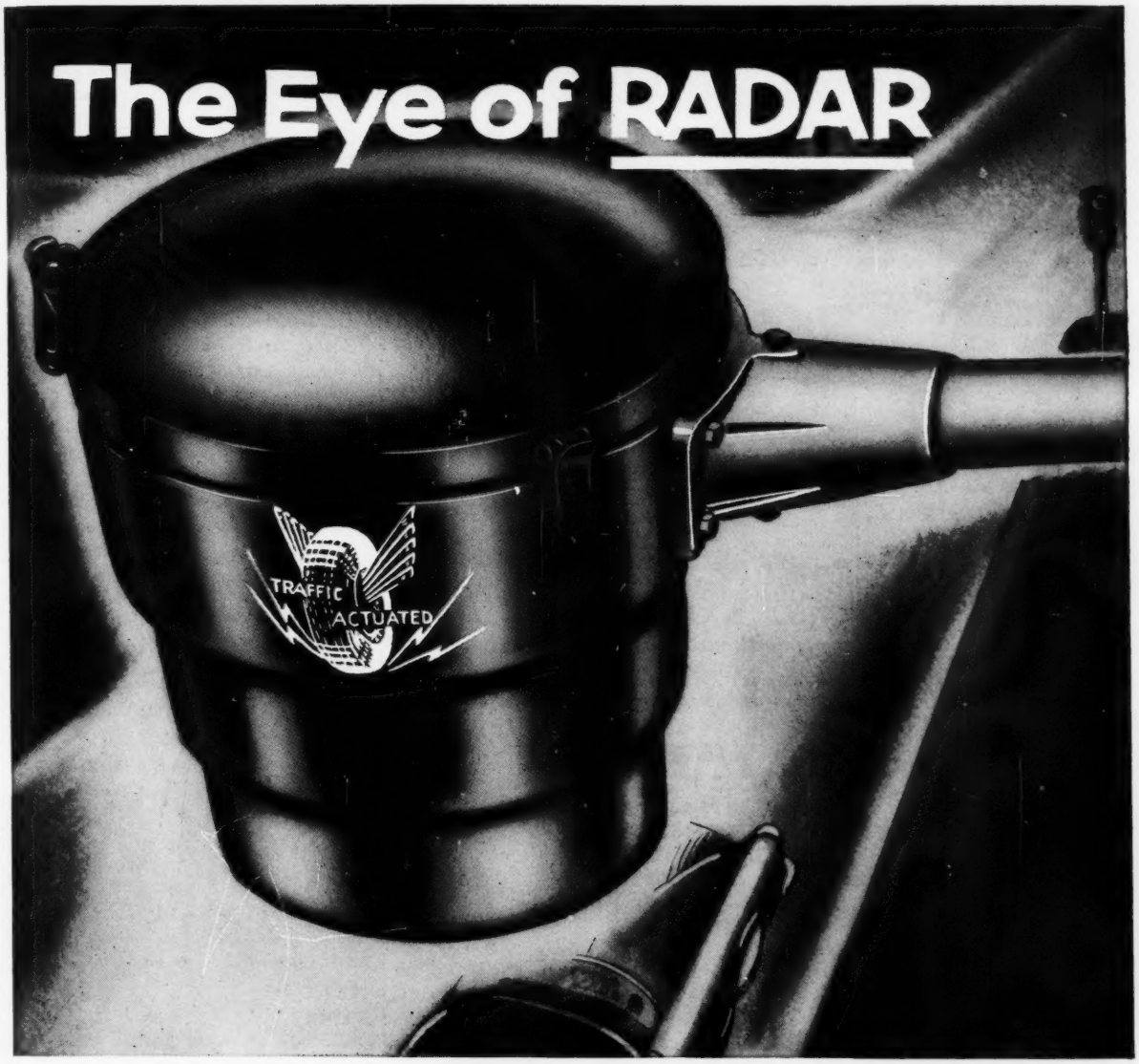
"Gee, Mayor, that's real philosophy," said Henry, grinning broadly. "I feel just like the man back from his honeymoon who told the boys that he had never before realized how much fun a fellow could have without laughing."

"That's good!" laughed the Mayor. "That's very good! Where'd you get it?"

"Heard that from a travelling man, but I bet it'd even make Claude R. McCamment of Kansas smile slightly."

The P.E. hadn't laughed, which showed that he was his old, normal, cheerful self again. "Listen to this 'un," he said, "Got it from Tim Todd, one of them effete Easterners you'd never think had time to tell a joke. Seems a man had a flat tire in front of a lunatic asylum. He ran it to the curb, jacked up the wheel and took it off. Put his lugs in the hub cap and set it on the curb. But, in puttin' on his spare, he knocked the cap off and the lugs went down an inlet. He began to cuss and gripe about having to lose a lot of time phoning to a garage and waiting until help came. An inmate of the asylum, who had been an interested watcher from inside the fence around the asylum remarked: 'Why don't you take one lug from each of the other three wheels and use them to fasten on your spare. That way you can drive up and not lose any time?' 'Now, why didn't I think of that?' exclaimed the motorist. 'Here, I'm supposed to be smart, but you, an inmate of an asylum, come up with a good idea like that!' 'Hell, man!" the inmate said, indignantly, 'I'm in this asylum for being crazy—not stupid!' "

The three men laughed, shook hands and each headed to the heap of work awaiting him, his step springy, his eyes bright with the glint of accomplishment.



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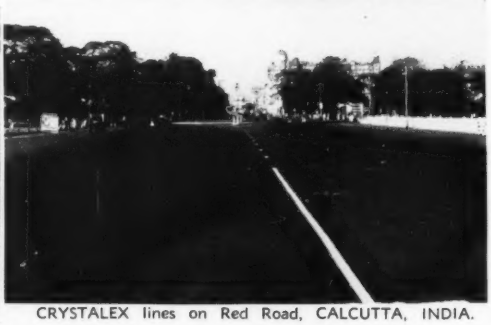
WHITE - YELLOW - RED - BLACK

NEWARK AIRPORT. Note the skid mark of a landing aircraft, which though clearly evident on the asphalt surface has almost cleaned off the CRYSTALEX by weathering and wear. (Laid October 1953; photographed July 1955)



CRYSTALEX lines on Red Road, CALCUTTA, INDIA.

CRYSTALEX "B" crosswalks and stop lines at Providence, R. I. (Laid June 1955; photographed August 1955)

WHAT IS CRYSTALEX??—

Crystalex is not a paint. It is not nailed, glued, or imbedded in the surface. It is a thermoplastic compound applied in a molten state at a high temperature to form a continuous line of any desired length or width.

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POSITIONS AVAILABLE

CITY OF RACINE WISCONSIN

TRAFFIC ENGINEER to carry on such research as necessary to guide the planning and operation of the city's street, traffic and parking systems and to assist in the formulation of traffic regulations. He will also be asked to plan and administer the city's street lighting program.

REQUIREMENTS — The appointee shall be a registered professional engineer or capable of registration in the State of Wisconsin.

SALARY — The salary is open depending upon the qualifications of the individual but shall not exceed the sum of $7500 per year.

Write:
Jack H. Humble, Mayor
City of Racine, Wisconsin

CITY OF WASHINGTON, D. C.

ASSOCIATE TRAFFIC SIGNAL ENGINEER to study traffic conditions and adequacy of present signals, coordinate timing of signals according to traffic movement and suggest changes and improvements, perform other related duties.

REQUIREMENTS — Graduate from College in Engineering (or have equivalent experience, or combination of these) plus at least 1½ years' experience in Traffic Engineering, with specialization in traffic signal work.

SALARY—$5,440-$6,250 per year.

WORKING CONDITIONS — Liberal Retirement Plan, 40-hour week, annual and sick leave.

Apply:
Department of Vehicles and Traffic
301 C Street, N.W.
Washington, D. C.

CITY OF TYLER, TEXAS

TRAFFIC SAFETY AND PLANNING ENGINEER—A new position created in the City of Tyler.

REQUIREMENTS—A college graduate between the ages of 30 and 40 years, and with some experience in safety and planning engineering.

SALARY—$6,000 per year.

Apply:
C. P. Stewart, City Manager
Tyler, Texas

CITY OF MIDLAND TEXAS

TRAFFIC ENGINEER to direct the activities of a Traffic Engineering Department in a progressive, fast-growing city of 45,000. Work involves the supervision of subordinates in making traffic control and parking studies, the installation and maintenance of traffic control signals, signs and street markings and parking meters.

MINIMUM REQUIREMENTS—Graduation from a four-year college with specialization in traffic engineering or considerable experience in the field of traffic engineering.

SALARY — Salary open. Excellent fringe benefits.

Apply:
City Manager, City of Midland
Box 831, Midland, Texas

CITY OF GRAND PRAIRIE TEXAS

TRAFFIC ENGINEER to establish a full-time Traffic Engineering Department.

REQUIREMENTS—College graduate with some training and experience in traffic and planning.

SALARY—$5,700 per year.

Apply:
Dean I. Davley, City Manager
City of Grand Prairie, Texas

"For real full-vehicle-actuated control—not just car-counting—

General Electric's New Volume-density Controller Provides Most Efficient Use of Your Intersection at All Times"

says Don Carter, Manager, Traffic Signal and Control Sales, General Electric Co.

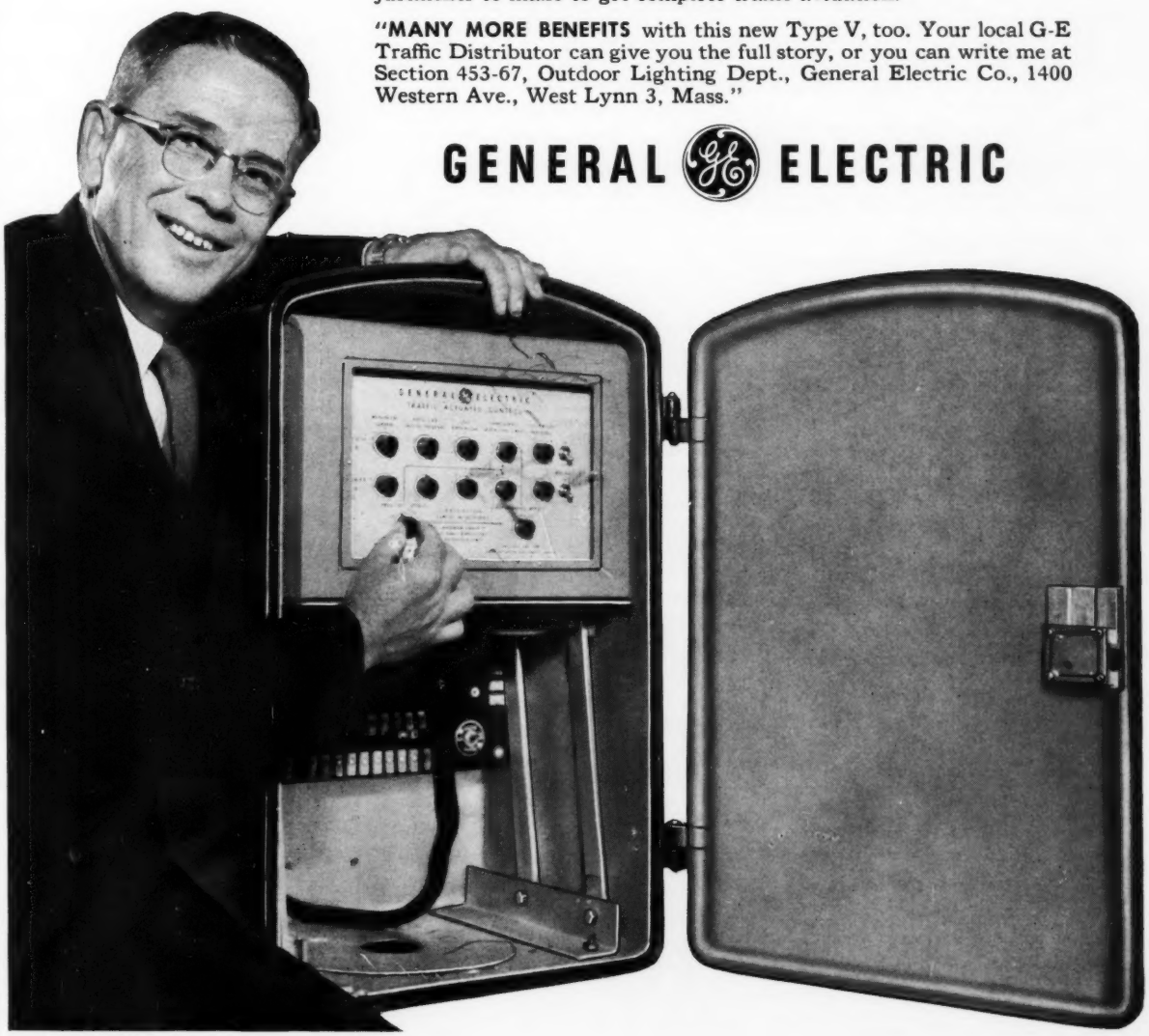
"No more irksome, unnecessary delays at your full-vehicle-actuated intersections with the new G-E Type V! This electronic controller not only recognizes and counts *all* vehicles approaching the intersection from *all* sides, but integrates the results and continuously adjusts signal timing to the current traffic pattern.

"**THIS KNOB** I'm adjusting, for instance, regulates the amount of time by which each car approaching on the red side reduces the remaining time limit before the signal is changed. Another knob regulates the 'more green' effect of each car approaching on the green street.

"**ONLY 12 KNOBS** in this controller! This means you have fewer adjustments to make to get complete traffic a:tuation.

"**MANY MORE BENEFITS** with this new Type V, too. Your local G-E Traffic Distributor can give you the full story, or you can write me at Section 453-67, Outdoor Lighting Dept., General Electric Co., 1400 Western Ave., West Lynn 3, Mass."

GENERAL ELECTRIC



Membership Applications

The following applications have been received since the list of applicants published last month.

APPLICATIONS FOR TRANSFER

BALTAYAN, Ara Moses
Engineer
Automatic Signal Division
Eastern Industries, Inc.
Regent Street
East Norwalk, Conn.
September 19, 1955 for ASSOCIATE grade

BURTON, Francis C.
Traffic Engineer
City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico
September 14, 1955 for ASSOCIATE grade

CONNER, Samuel H.
City Traffic Engineer
City of Portland
City Hall
Portland, Maine
September 14, 1955 for ASSOCIATE grade

DIEHL, Elton G.
Traffic Control Engineer II
Bureau of Traffic Engineering
804 City Hall
Milwaukee 2, Wisconsin
September 19, 1955 for ASSOCIATE grade

GITTENS, Michael J.
Traffic Engineer
City of Pittsburgh
908 City-County Building
Pittsburgh 19, Pennsylvania
September 2, 1955 for MEMBER grade

KELL, James H.
Junior Research Engineer & Associate in Transportation Engineering
Institute of Transportation and Traffic Engineering
University of California
Berkeley 4, California
September 6, 1955 for ASSOCIATE grade

LEWIS, W. R.
District Traffic Engineer
Kentucky Department of Highways
Flemingsburg, Kentucky
September 15, 1955 for ASSOCIATE grade

OAKES, Roy E.
Acting Chief, Traffic Engineering Division
Department of Public Works
City Hall
Berkeley, California
September 15, 1955 for ASSOCIATE grade

OLSON, Maurice C.
Traffic Engineering Associate
Department of Traffic
City of Los Angeles
Room 1000, City Hall
Los Angeles 12, California
September 19, 1955 for ASSOCIATE grade

STEWART, A. Lynn
City Traffic Engineer
New City Hall
Fresno, California
August 17, 1955 for MEMBER grade

WALLACE, Robert W.
District Traffic Engineer
Virginia Department of Highways
Suffolk, Virginia
September 22, 1955 for ASSOCIATE grade

NEW APPLICATIONS

ALLINSON, Wayne C.
Supervising Highway Research Engineer
Rhode Island Dept. of Public Works
237 State Office Building
Providence, Rhode Island
August 31, 1955 for ASSOCIATE grade

BARR, John Wallace
Graduate Assistant
Joint Highway Research Project
Purdue University
Civil Engineering Building
Lafayette, Indiana
August 10, 1955 for JUNIOR grade

BECK, Edwin Lee
Assistant Traffic Engineer
Municipal Building, Room 411
City of Tulsa
Tulsa, Oklahoma
August 8, 1955 for JUNIOR grade

CHRYST, Robert Myles
City Traffic Engineer
City Hall
120 North Duke Street
Lancaster, Pennsylvania
August 24, 1955 for JUNIOR grade

COTTAM, Roy W.
Assistant Electrical Engineer of Highway Traffic
New York City Department of Traffic
100 Gold Street
New York City, N. Y.
August 31, 1955 for JUNIOR grade

DANIELS, Jack A.
Draftsman (Design)
Traffic Engineering Department
City of Fort Worth
Old Post Office Building
950 Jennings
Fort Worth, Texas
August 25, 1955 for JUNIOR grade

GRANN, Henry R.
Traffic Engineer
Texas Highway Department
P.O. Box 3067
Dallas 1, Texas
August 19, 1955 for ASSOCIATE grade

HARRISON, Billy John
Engineer I
Traffic Engineering Department
City of Fort Worth
Old Post Office Building
950 Jennings
Fort Worth, Texas
August 22, 1955 for JUNIOR grade

HAWKINS, Harvey E.
Engineer of Surveys and Plans
Department of Traffic & Transportation
Room 702, City Hall
Houston, Texas
August 29, 1955 for JUNIOR grade

HOLADAY, Robert E.
Executive Assistant to Traffic Engineer
Ohio State Highway Department
450 East Town Street
Columbus, Ohio
August 12, 1955 for ASSOCIATE grade

HOLLOWAY, Frank M.
Research Engineer
Joint Highway Research Project
Purdue University
Lafayette, Indiana
August 17, 1955 for JUNIOR grade

HUBBARD, Robert A.
Highway Engineer Trainee
Virginia Department of Highways
Traffic and Planning Division
1221 E. Broad Street
Richmond, Virginia
September 1, 1955, for JUNIOR grade

HUBBELL, Richard E.
Assistant Civil Engineer
Department of Traffic, New York
100 Gold Street
New York 38, New York
September 15, 1955 for JUNIOR grade

JACKSON, (Miss) Elizabeth Anne
Associate Planner
Chicago Plan Commission
City Hall
Chicago, Illinois
August 11, 1955 for JUNIOR grade

KERMIT, Mark L.
Assistant Engineer I
Bureau of Engineering
Room 251 City Hall
San Francisco, California
August 15, 1955 for ASSOCIATE grade

MARTIN, Paul G.
Partner (& owner)
Burgwin & Martin
Consulting Engineers
406 West 7th Street
Topeka, Kansas
August 31, 1955 for MEMBER grade

NIELSEN, Mogens Thor Madsen
Traffic Engineer, Grade II
Traffic Engineering Division
City of Toronto
72 Queen Street, West
Toronto, Ontario, Canada
September 12, 1955 for JUNIOR grade

SMALL, James McCarthy
Assistant Planning (Highway) Engineer
Planning Division
Washington State Highway Department
Transportation Building
Olympia, Washington
September 12, 1955 for JUNIOR grade

SMITH, Edward L.
Senior Traffic Engineer
National Safety Council
425 North Michigan Avenue
Chicago 11, Illinois
September 1, 1955 for JUNIOR grade

STEWART, William A.
Chief Engineer
Municipal Department
A. D. Margison & Associates Ltd.
30 Eglinton Avenue E.
Toronto, Ontario, Canada
August 26, 1955 for JUNIOR grade

TSIKNAS, John C.
Junior Civil Engineer (Traffic)
Engineering Department
City of San Diego
268 Civic Center
San Diego 1, California
August 26, 1955 for JUNIOR grade

WITHEFORD, David K.
Assistant Traffic Engineer
Delaware State Highway Department
Dover, Delaware
September 1, 1955 for JUNIOR grade

POSITION AVAILABLE

TRAFFIC ENGINEER to determine and recommend the desired location of, and install traffic signals, signs, and markings; supervise the making of, and analyses traffic accident records, volume counts, speed checks, and other related traffic studies; direct the installation and maintenance of traffic signals including their proper operation and timing; cooperate with other agencies in the planning and handling of traffic; address civic groups on traffic engineering problems and programs; maintain records, prepare reports, and develop budget estimates for operations; answer inquiries and hear complaints of the public.

EDUCATION AND EXPERIENCE—Two years' experience in traffic engineering; graduation from a four-year college or university preferably in Civil Engineering, supplemented by special training and study in Traffic Engineering courses; or any equivalent combination of experience and training.

SALARY—$395 - $513 per month.

Apply:
City Manager
City Hall, Eugene, Oregon

LETTERS TO THE EDITOR

Dear Sir:

I would like to point out that this University is advertising its recently created Chairs of Traffic Engineering and Highway Engineering with closing date for applications 30th August, 1955. I am taking the liberty of forwarding to you copies of the advertisements and request that you give us your advice on the best methods of filling these vacancies. Any publicity you could give to these appointments in the United States would be appreciated.

The Chairs were created in the following manner. The Australian Automobile Association agreed to make available the sum of £A5,000 for five years to finance the Chair of Traffic Engineering. Following this the Main Roads Board of New South Wales offered a similar amount to finance the Chair of Highway Engineering.

The Prime Minister of Australia selected the N.S.W. University of Technology as the most suitable University in which to create the Chairs and the University Council has accepted these offers.

The Chair of Highway Engineering has been advertised only in Australia and Great Britain and the Chair of Traffic Engineering has been advertised only in Australia, but you will see from our advertisements that provision has been made for the appointee to this Chair to travel abroad for twelve months possibly in the United States to study traffic engineering there.

J. O. A. BOURKE
N.S.W. University of Technology
Kensington, N.S.W., Australia

What Will You Pay?

Recently Associate Member Walter Macnee, Traffic Engineer for the Ontario Highway Department, forwarded to the Editor for publication an actual letter his Department had received. We've tried to reproduce it exactly as written, misspelling and all.—EDITFR.

Dear Sir:

Follow your answer, the Ontario Department of Highways are interest for any good suggestion concerning the traffic problems with the ever growing toll of vehicles.

Thank my proffession as air-plan and car, trucks, Diesel mechanic and trough my travelling on many many countries I thing I have large experiement about difference traffic problem to relieve.

Sir. I have some of very use-full ideas for traffic regular and a kind of Highways system which one we can completely eliminate the so called Head on Collision. These kind of system is mostly very use-full in time (Weather) rainy and what more dangerous in fog. This kind of highway to build cost absolute not more as to-days knew highways cost.

Before I tell You more or maybe all about my ideas I wish to know what price you have for safety traffic suggestion and further how You thing give me fully assurance for my right. I tell right now that my ideas are same kind of combinations of to-days knew and used, so I don't like hear latter on that is all was knew before, just was not employd like I should suggest for really safe for traffic.

If your department still interest for my traffic and highways suggestion, I will be gladly give my best.

Very truly yours,

JOHN DOE

Rapid Mass Transportation by Monorail

With the breaking of ground Saturday, August 20, in Houston, Texas, for a Monorail test pilot line, a whole new concept of intracity rapid passenger transportation for the United States, for the world, can be envisioned.

The 830-foot test pilot line is being constructed in Arrowhead Park here for a test of the problems involved in this type of transit. Although there are variations of Monorail in Europe, this is the first time that the construction and operation of such a line using modern developments in metals and motors has been attempted anywhere in the world.

Approximately 100 persons were on hand for the ceremonies including prominent Houston business men, city government and transportation officials, members of the Monorail board of directors, state representatives and a congressman.

The pilot line at Arrowhead Park will be supported by 15 concrete towers of an inverted "J" design. It may eventually be expanded from 830-feet to a mile in length. The cost has been estimated by Mr. Goodell at $500,000 a mile.

The coach used on the pilot line will have curved panels of glass to permit visibility through the top. It will be equipped with seven and one-half tons of air conditioning, and will seat 51 passengers.

A gyroscope installed in each cab will give a "floating", even ride with no vibrations.

It is estimated that the test pilot line will be completed in November.

BUSINESS SITE FOR SALE

The following ad appeared in a Playhouse Program in New London, New Hampshire:

FOR SALE

BUSINESS SITE IN LARGE CITY BUSY INTERSECTION WITH THE TRAFFIC LIGHT OUT OF ORDER.

Just the right spot for Doctor or Lawyer

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LOOKING AHEAD

DECEMBER 4-10 — NEW ORLEANS, LOUISIANA
Annual meeting of the American Association of State Highway Officials.

JANUARY 11-14, 1956—MIAMI BEACH, FLA.
Annual convention of the American Road Builders' Association.

JANUARY 16-20, 1956—WASHINGTON, D. C.
Annual meeting of the Highway Research Board.

MARCH 4-6, 1956—ATLANTA, GEORGIA.
Southern Safety Conference and Exposition, Biltmore Hotel.

REFERENCE NOTES

(Continued from page 30)

signal equipment allowing for right turn supplemental indications can be installed.

The questionnaires were answered promptly and completely. In the comment section of the questionnaire many of the cities included small sketches of typical applications of their use of the right turn on red. The information received in the questionnaire will be most helpful in setting up the policies for the use of this traffic practice in Wichita.

Hawkins Traffic SAFETI-BAR

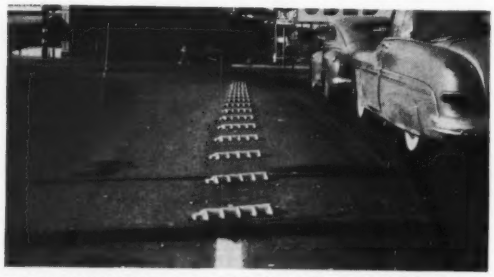
A JIGGLE-BAR THAT JIGGLES AND CONTROLS

Concepts evolving from use of jiggle-bars are often misunderstood. Barriers, damaging obstacles and pre-cast curbs which throw vehicles out of control have no engineering factors. A true jiggle-bar CONTROLS, GUIDES. PROTECTS and is a step TOWARD SAFETY.
PROTECTING a TRAFFIC SIGN with DEATH is not an Engineering feat.

Write for Illustrated Circular

MANY USES:—"Safeti-Bars" are your "best bet" for protecting safety islands, preventing dangerous left turns, centerlining narrow bridges and tunnels, marking and channelizing parking lots, etc.

EASILY INSTALLED: — With each "Safeti-Bar," securing pins and adhesive mastic are supplied. A special reflective coating is available at slight extra cost.



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BAERWALD, John E. (Associate)
Assistant Professor of Traffic Engineering, Civil Engineering Hall, University of Illinois, Urbana, Illinois.

BALTAYAN, Ara M. (Junior)
Engineer, Automatic Signal Division, East Norwalk. SEND MAIL: 97 Seneca Road, New Haven, Connecticut.

BORROWMAN, Ralph W. (Member)
Engineer 1/c Planning, Department of Planning & Works, Corporation of City of Ottawa, Ottawa, Ontario, Canada.

BOWMAN, Benjamin H. (Associate)
Traffic & Safety Engineer, Ohio Turnpike Commission, 8080 Prospect Road, Berea, Ohio.

CROMMELIN, Robert W. (Junior)
Associate Traffic Engineer, City of Richmond. SEND MAIL: 1687½ Thousand Oaks Boulevard, Berkeley 7, California.

EWENS, W. E. (Associate)
Research Engineer, Toronto Transit Commission. SEND MAIL: 462 Morrison Road, Oakville, Ontario, Canada.

GALLOWAY, William G. (Junior)
Associate Traffic Engineer, Traffic Engineering Division, Municipal Building, Dayton 2, Ohio.

GEORGE, Stephen, Jr. (Junior)
Assistant Transportation Engineer, Transportation Research, Civic Center, San Diego, California.

GRAVES, Paul B. (Junior)
City Engineer, Box 56, Bethany, Oklahoma.

GUTHRIE, Lt. Col. James R. (Associate)
Hq. 7278th GU, Transportation Terminal, Command (NEAC), Pepperell Air Force Base, St. John's Newfoundland.

HAMMOND, Daniel S. (Associate)
Chief Engineer, Bruce Campbell & Associates, Boston. SEND MAIL: 11 Greenwood Road, Canton, Massachusetts.

HAVENNER, Vernon (Associate)
Chief Electrician Foreman, Traffic & Lighting Division, Los Angeles County Road Dept. SEND MAIL: 978 West Glenoaks Boulevard, Glendale 2, California.

HUBER, Matthew J. (Junior)
Research Associate, Yale Bureau of Highway Traffic, 311 Strathcona Hall, New Haven 11, Connecticut.

KEESE, Charles J. (Associate)
Associate Professor, Civil Engineering Department, Texas A. & M. College, College Station, Texas.

KIES, Lee D. (Junior)
Associate Traffic Engineer, City Hall. SEND MAIL: 4020 Parkside Court, Sacramento, California.

KUNDE, George H. (Junior)
City Traffic Engineer, Miami, Florida.

LEEK, John R. (Associate)
Bureau of Research & Planning, Illinois Division of Highways. SEND MAIL: 1207 Oakdale Avenue, Springfield, Illinois.

MUELLER, Edward A. (Junior)
Assistant Traffic Engineer, Traffic & Planning Division, State Road Department, Tallahassee, Florida.

PEPPER, Allan R. (Member)
Traffic Engineer, Department of Highways, Planning & Research Division, Traffic Operations Section, 4201 East Arkansas Avenue, Denver 22, Colorado.

RAYMOND, William L., Jr. (Junior)
Highway Engineer, Tippetts-Abbett-McCarthy-Stratton, 62 West 47th Street, New York 36, New York.

ROSENFIELD, David (Junior)
Engineer, Traffic Department, Clarkeson Engineering Company, Inc., Boston, Massachusetts. SEND MAIL: 618 Park Avenue, Woonsocket, Rhode Island.

SCHROEDER, Walter R. (Junior)
Transportation Planning Engineer, Planning Department, P.O. Box 1836, Stockton, California.

SEXTON, Burton H. (Member)
Traffic and Transportation Consultant, 4540 MacArthur Boulevard, N.W., Washington 7, D.C.

SMOOT, A. Glen (Member)
Consultant & Partner, Bartlett Engineering Company. SEND MAIL: 40 West Mariposa Street, Phoenix, Arizona.

STEELE, Clayton S. (Associate)
Transit Operations Engineer, Department of Public Property, 1302 City Hall Annex, Philadelphia 7, Pennsylvania.

WATERS, Charles R. (Member)
Associate, DeLeuw, Cather & Brill, 47 West Huron Street, Buffalo 2, New York.

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Announcing a new, revolutionary hi-target sign finish...

Here's the brightest news for traffic engineers in many a long night! Prismo introduces an entirely new reflective sign finish with long range and ultra-high "flash" value, yet with maximum legibility. Prismo '200' is an all-in-one reflective finish developed to brilliantly answer every reflective sign requirement and still retain Prismo's shining virtues of economy and ease of application.

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You'll want to know more about this high-target, low-cost reflective finish. For more details, write to

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